SUPER◉®

SUPERSERVER 6022C

USER'S MANUAL

Revision 1.0a

Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 6022C. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 6022C is a high-end dual processor 2U rackmount server based on the SC822 2U rackmount server chassis and the P4DC6+, a dual processor motherboard that supports single or dual Intel® Xeon™ 603-pin 1.5 -2.4+ GHz processors at a front side (system) bus speed of 400 MHz and up to 2 GB 600/800 MHz RDRAM main memory.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the SUPER P4DC6+ mainboard and the SC822 chassis, which make up the SuperServer 6022C.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 6022C into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 6022C.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the P4DC6+ motherboard, including the locations and functions of connections, headers, jumpers and IRQs. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC822 2U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SCSI or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

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Chapter 1
Introduction to the SuperServer 6022C

1-1   Overview

The Supermicro SuperServer 6022C is a high-end, dual Xeon 2U rackmount server that features some of the most advanced technology currently available. The SuperServer 6022C is comprised of two main subsystems: the SC822R-400LP 2U rackmount chassis and the P4DC6+; a dual Xeon processor mainboard based on Intel's 860 chipset. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 6022C. (www.supermicro.com)

In addition to the mainboard and chassis, various hardware components may have been included with your SuperServer 6022C, as listed below:

- Up to two (2) 603-pin Xeon (Foster) processors*

- Two (2) CPU heat sinks* (SNK-030)

- Up to 2 GB 600/800 MHz RDRAM main memory*

- One (1) 1.44" floppy drive

- One (1) slim CD-ROM drive

- One (1) 5.25" drive bay

- One (1) SCA SCSI backplane

- Six (6) SCA **1-inch high** SCSI drive carriers

- One (1) 8 MB low profile ATI Rage graphics card (PCI)

- SCSI Accessories
  One (1) internal 68-pin Ultra160 SCSI cable for SCA SCSI backplane
  One (1) set of SCSI driver diskettes
  One (1) SCSI manual

- Rackmount hardware (with screws):
  Two (2) rack rail assemblies
  Six (6) brackets for mounting the rack rails to a rack/telco rack

- One (1) CD-ROM containing drivers and utilities:
  Intel LANDesk Client Manager
  ATI Rage graphics controller driver
  LAN driver
  SCSI driver

- SuperServer 6022C User's Manual

Type and number depends upon the configuration ordered.

1-2   Server Chassis Features

The SuperServer 6022C is a high-end, scaleable 2U rackmount server platform designed with today's most state-of-the-art features. The following is a general outline of the main features of the SC822 chassis.

System Power

When configured as a SuperSever 6022CF, the SC822 chassis includes a 400W power supply.

SCSI Subsystem

The SCSI subsystem supports two 80-pin SCA Ultra160 SCSI hard drives. (Any standard 1" drives are supported. SCA = Single Connection Attachment.) The SCSI drives are connected to an SCA backplane that provides power, bus termination and configuration settings. The SCSI drives are also hot-swap units.

Control Panel

The SC822's control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity and system overheat conditions. The control panel also includes a main power button and a system reset button.

I/O Shield

The SC822 is a 2U rackmount chassis. Its I/O shield provides seven moth-
erboard low profile expansion slots, two COM ports, two USB ports, PS/2
mouse and keyboard ports, sound ports and one Ethernet port. See Figure
1-1 for locations.
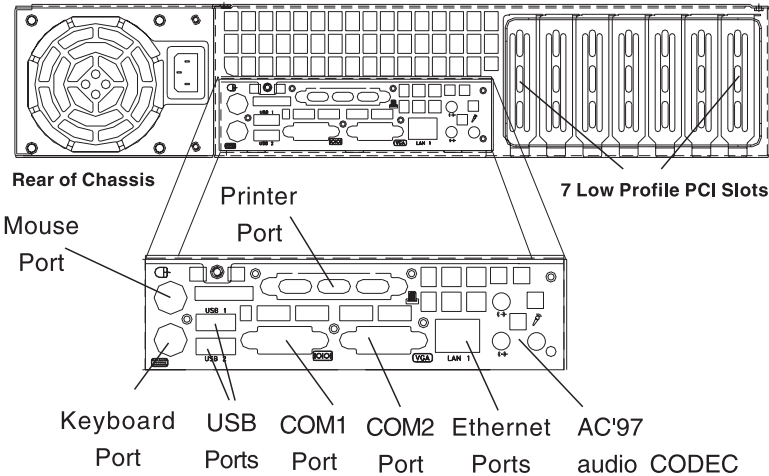
Figure 1-1.   I/O Backpanel

Cooling System

The SC822 chassis has an innovative cooling design that includes four 8-
cm redundant system cooling (intake) fans. The fans plug into chassis fan
connectors that are located behind the HDD drive bays. These fans run
continuously at full rpm. If they break down, the ambient air temperature
inside the chassis will rise and activate an overheat LED.

1-3   Mainboard Features

At the heart of the SuperServer 6022C lies the P4DC6+, a dual processor motherboard designed to provide maximum performance. Below are the main features of the P4DC6+.

Chipset

The P4DC6+ is based on the Intel 860 chipset, which is a high-performance core logic chipset that consists of three major components: the Memory Controller Hub (MCH), the P64H and the I/O Controller Hub 2 (ICH2).

The MCH is optimized to provide superior performance between single or dual Xeon CPUs and the dual channel RDRAM memory, which operates at up to 3.2 GB/s data bus bandwidth.

The P64H provides support for two PCI-64 slots and two SCSI hard disk drive channels. It interfaces directly with the MCH.

The ICH2 is a highly integrated multifunctional I/O Controller Hub that provides the interface to the PCI Bus and integrates many of the functions needed in today's server platforms.

Processors

The P4DC6+ supports single or dual Xeon Foster 1.5-2.4+ GHz processors at a 400 MHz front side bus speed. Please refer to the support section of our web site for a complete listing of supported processors (http://www.supermicro.com/TechSupport.htm).

Memory

The P4DC6+ has 4 (four) 184-pin RIMM slots that can support up to 2 GB of 600 or 800 MHz RDRAM. Module sizes of 64 MB, 128 MB, 256 MB and 512 MB may be used to populate the RIMM slots.

Onboard SCSI

Onboard SCSI is provided with an Adaptec AIC-7899W SCSI controller chip, which supports dual channel, Ultra160 SCSI at a burst throughput rate of 160 MB/sec.

PCI Expansion Slots

The P4DC6+ has two 64-bit 66/33 MHz and four 64-bit 33 MHz PCI slots.

ATI Graphics Controller

The P4DC6+ includes an 8 MB PCI ATI Rage XL low profile video graphics card. The Rage XL fully supports sideband addressing. This graphics package provides a bandwidth of up to 512 MB/sec over a 32-bit graphics memory bus.

Onboard Controllers/Ports

One floppy drive controller and two onboard IDE controllers support one up to four hard drives or ATAPI devices. Onboard I/O ports include two COM ports, two USB ports, PS/2 mouse and keyboard ports, a parallel (printer) port, sound ports and a 10/100 MB Intel 82559 Ethernet (NIC) port.

Other Features

Other onboard features that promote system health include five voltage monitors, two CPU temperature sensors, four fan speed sensors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-4   Contacting Supermicro

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Technical Support:

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Chapter 2
Server Installation

2-1   Overview

This chapter provides a quick setup checklist to get your SuperServer 6022C up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your SuperServer 6022C system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a motherboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2   Unpacking the SuperServer 6022C

You should inspect the box the SuperServer 6022C was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 6022C. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3   Preparing for Setup

The box the SuperServer 6022C was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

! Warnings and Precautions! !

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SCSI drives and power supply units to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

2-4   Installing the SuperServer 6022C into a Rack

This section provides information on installing the SuperServer 6022C into a rack unit. If the 6022C has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the 6022C into a rack with the rack rails provided. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails

You should have received two rack rail assemblies with the SuperServer 6022C. Each of these assemblies consist of three sections: an inner fixed chassis rail that secures to the 6022C (A) and an outer fixed rack rail that secures directly to the rack itself (B). A sliding rail guide sandwiched between the two should remain attached to the fixed rack rail. (See Figure 2-1.) The A and B rails must be detached from each other to install.

To remove the fixed chassis rail (A), pull it out as far as possible - you should hear a "click" sound as a locking tab emerges from inside the rail assembly and locks the inner rail. Then depress the locking tab to pull the inner rail completely out. Do this for both the left and right side rack rail assemblies.
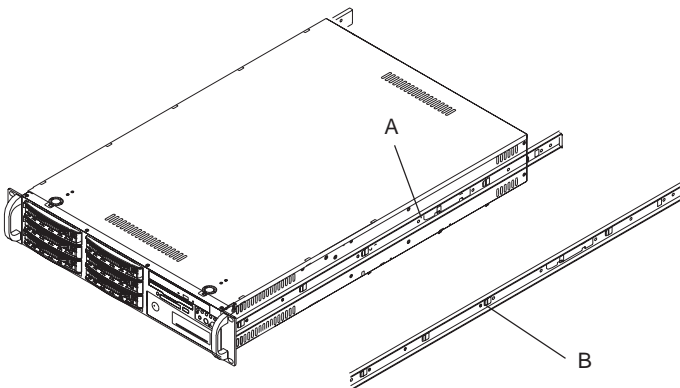
Figure 2-1.   Identifying the Sections of the Rack Rails

Installing the Chassis Rails

Remove the handles on the 6022C chassis (see Figure 2-1) and position the fixed chassis rail sections along the side of the 6022C chassis making sure the two screw holes line up. Note that these two rails are left/right spe cific. Slide the rails on to the hooks on both sides of the chassis. Screw the rail securely to the side of the chassis, and then reinstall the chassis handle (see Figure 2-2). Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

Locking Tabs: As you have seen, both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.
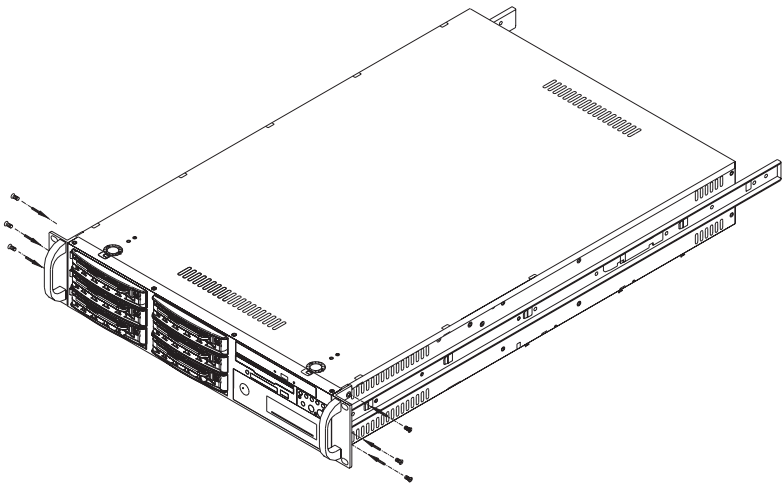
Figure 2-2. Installing Chassis Rails

Installing the Rack Rails

Determine where you want to place the SuperServer 6022C in the rack. (See Rack and Server Precautions in Section 2-3.) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the

other assembly to the other side of the rack, making both are at the exact same height and with the rail guides facing inward.

Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the chassis. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-3.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

Figure 2-3. Installing the Server into a Rack
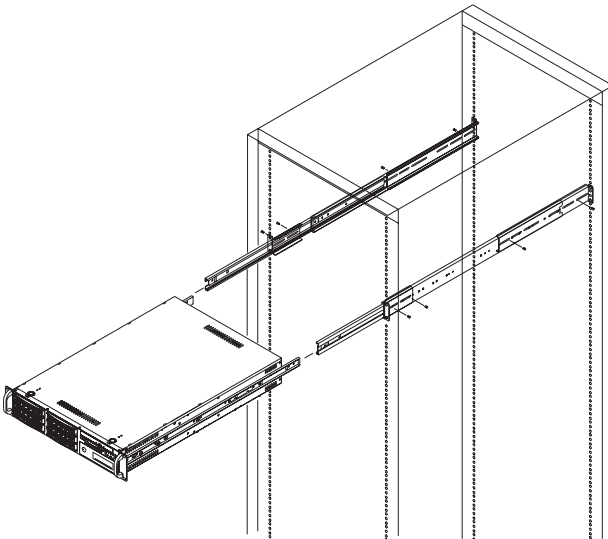
Installing the Server into a Telco Rack

If you are installing the SuperServer 6022C into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accomodate the width of the telco rack.

Figure 2-4.   Installing the Server into a Telco Rack
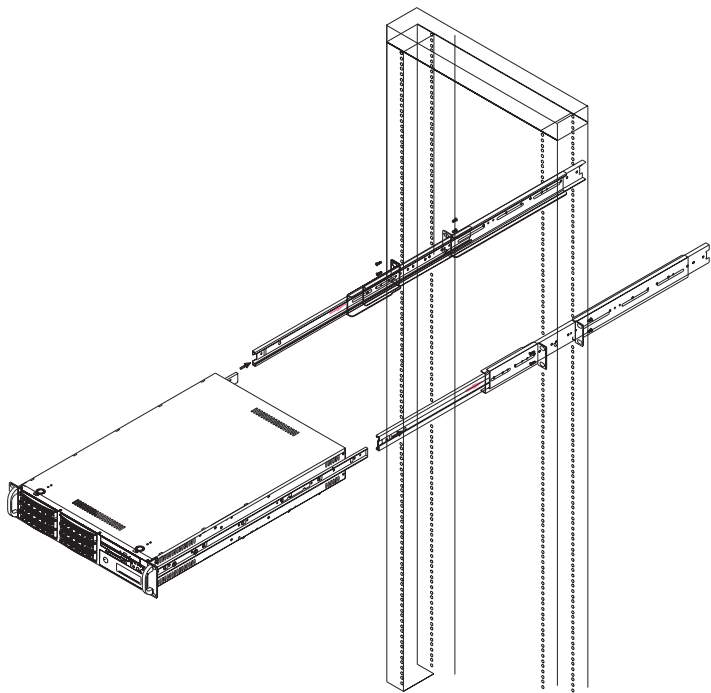
2-5   Checking the Motherboard Setup

After you install the 6022C in the rack, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

1. Accessing the inside of the 6022C (see Figure 2-5):

First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover. There is a large rectangular recess in the middle front of the top cover to help you push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. Check the CPUs (processors):

You should have one or two processors already installed into the system board. Each processor should have its own heatsink attached. See Section 5-5 for instructions on processor installation.

3. Check the system memory:

Your 6022C server system may have come with system memory already installed. Make sure all RIMMs are fully seated in their slots. For details on adding system memory, refer to Section 5-6.

4. Installing add-on cards:

If desired, you can install low profile add-on cards to the system. See Section 5-7 for details on installing PCI add-on cards.

5. Check all cable connections and airflow:

Make sure all power and data cables are properly connected and not blocking the airflow. See Section 5-3 for details on cable connections. Also, check the air seals for damage. The air seals are located under the blower fan and beneath the frame cross section that separates the drive bay area from the motherboard area of the chassis.
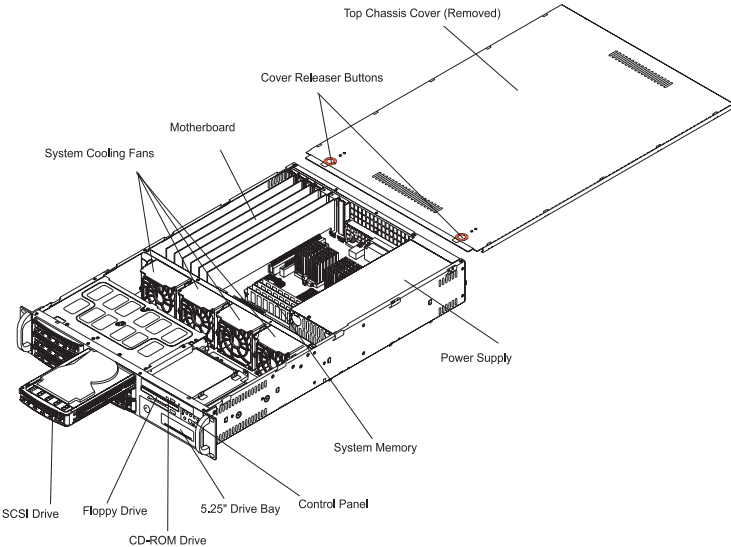
Figure 2-5.   Accessing the Inside of the SuperServer 6022C (with one SCSI Drive removed)

2-6   Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives, the SCSI drives and SCA backplane have been properly installed and all connections have been made.

1. Accessing the drive bays:

All drives can be accessed from the front of the server. For servicing the CD-ROM and floppy drives, you will need to remove the top chassis cover. The SCSI disk drives can be installed and removed from the front of the chassis without removing the top chassis cover. The 5.25" drive bay cover can be removed by pressing the tab on the corner of the drive bay and then pushing the bay outward from the inside.

2. Check the SCSI disk drives:

Depending upon your system's configuration, your system may have one or more SCSI drive already installed. If you need to install additional SCSI drives, please refer to Section 6-4.

3. Installing components into the 5.25" drive bay:

Refer to Section 6-4 if you wish to install a component into the 5.25" drive bay.

4. Reinstalling a CD-ROM and/or floppy disk drives:

Refer to Section 6-4 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

2-7   Checking the System Airflow

Airflow is provided by four 8-cm redundant cooling fans. The system com-
ponent layout was carefully designed to promote sufficient airflow through
the 2U rackmount space. Note that all power and data cables have been
routed in such a way that they do not block the airflow generated by the
fans.

2-8   Supplying Power to the System

The last thing you must do is to provide input power to the system. Plug
the power cord from the power supply unit into a high-quality power strip
that offers protection from electrical noise and power surges. It is
recommended that you use an uninterruptible power supply (UPS) source.
Finally, depress the power button on the front of the chassis to apply
power and boot the system.

Chapter 3
System Interface

3-1   Overview

There are several LEDs on the control panel as well as others on the SCSI drive carriers and the motherboard to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2   Control Panel Buttons

There are two push-button buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.

RESET

● **RESET:**   The reset switch reboots the system.

● **POWER:**   This is the main power switch, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system. (See also the power supply on/off switch in Section 3-5.)

3-3   Control Panel LEDs

The control panel located on the front of the SC822 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system.   This section explains what each LED indicates when illuminated and any corrective action you may need to take.

● **Overheat:** Indicates an overheat condition in the chassis. This may be caused by cables obstructing the airflow in the system, or the ambient room temperature being too warm.   You should also check to make sure that the chassis cover is installed and that all fans are present and operating normally.   Make certain that the heat sinks are installed properly (see section 5-5 and figure 5-4) and make certain that the chassis top cover is in place durning server operation to assure proper cooling air circulation.

NIC

● **NIC:** Indicates network activity on the LAN when flashing.

● **HDD:** Indicates IDE channel activity. On the SuperServer 6022C, this light indicates CD-ROM drive activity when flashing.

● **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 SCSI Drive Carrier LEDs

A SCSI drive carrier has two LEDs.

● **Green:** When illuminated, the green LED on the front of the SCSI drive carrier indicates drive activity. A connection to the SCSI SCA backplane enables this LED to blink on and off when that particular drive is being accessed.

● **Red:** A SAF-TE compliant backplane is needed to activate the red LED to indicate a drive failure. (A SAF-TE compliant SCSI backplane is optional on the 6022C.) If one of the SCSI drives fail, you should be notified by your system management software. Please refer to Section 6-4 for instructions on replacing failed SCSI drives.

3-5 Motherboard LED

There is only one LED on the motherboard. When illuminated, it indicates that system power is present on the motherboard. This LED is located in near the floppy connector.

Notes

Chapter 4
System Safety

4-1   Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 6022C from damage:

● Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

● Do not work alone when working with high voltage components.

● Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, memory modules and IDE and floppy drives. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

● When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

● Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

● Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

● The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

● Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery (located near the BIOS chip and the PCI 3 slot) is installed upside down, which will reverse its polarities. This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

4-2   General Safety Precautions

Follow these rules to ensure general safety:

● Keep the area around the SuperServer 6022C clean and free of clutter.

● The SuperServer 6022C weighs approximately 55 lbs (25 kg). When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

● Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

● While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

● Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

● After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3   ESD Precautions

!

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

● Use a grounded wrist strap designed to prevent static discharge.

● Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

● Touch a grounded metal object before removing the board from the antistatic bag.

● Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

● Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

● When handling chips or modules, avoid touching their pins.

● Put the motherboard and peripherals back into their antistatic bags when not in use.

● For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

4-4   Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 6022C is operating to assure proper cooling. Out of warranty damage to the 6022C system can occur if this practice is not strictly followed.

Chapter 5
Advanced Motherboard Setup

This chapter covers the steps required to install the P4DC6+ motherboard into the SC822 chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are also included. Remember to close the chassis completely when you have finished working with the motherboard to protect and cool the system better.

Tools Required

The only tools you will need to install the P4DC6+ into the SC822 chassis are a long and short Phillips screwdriver.

5-1 Handling the P4DC6+ Motherboard

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). Also note that the size and weight of the motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

• Use a grounded wrist strap designed to prevent static discharge.
• Touch a grounded metal object before removing any board from its anti-static bag.
• Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
• When handling chips or modules, avoid touching their pins.
• Put the motherboard, add-on cards and peripherals back into their anti-static bags when not in use.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

5-2 Motherboard Installation

This section explains the first step of physically mounting the P4DC6+ into the SC822 chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

1. **Accessing the inside of the 6022C (see Figure 2-5):**
   Two release buttons are located on the top cover of the chassis. Depressing both of these buttons while pushing the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. (If already installed in a rack, you must first release the retention screws that secure the unit to the rack. Then grasp the two handles on either side and pull the unit straight out until the rails lock into place.)

2. **Check compatibility of motherboard ports and I/O shield:**
   The P4DC6+ requires a chassis big enough to support a 12.05" x 13" extended ATX motherboard, such as Supermicro's SC822 2U rackmount. Make certain that the I/O ports on the motherboard properly align with their respective holes in the I/O shield at the back of the chassis.

3. **Mounting the motherboard onto the motherboard tray:**
   Carefully mount the motherboard to the motherboard tray by aligning the board holes with the raised metal standoffs that are visible on the bottom of the chassis. Insert screws into all the mounting holes on your motherboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the motherboard ground to provide a continuous ground for the system.

5-3   Connecting Cables

Now that the motherboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their motherboard connector designations noted) should be connected. (See the motherboard layout for connector locations.)

- IDE Device Cables (J6 and J7)

- Floppy Drive Cable (JP5)

- Ultra 160 LVD SCSI Connector (JA1, JA2)

- Control Panel Cable (JF1 - see next page)

Connecting Power Cables

The P4DC6+ has a 24-pin primary power supply connector designated "ATX Power" for connection to the ATX power supply. This ATX Power connector also is keyed to accept 20-pin power connectors if the power supply you are using has that type of connector. In addition, there is a 8-pin and a 4-pin connector that should also be used. See Section 5-8 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of this connector.

All JF1 wires have been bundled into single ribbon cable to simplify their connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis. The control signals are all on the even numbered pins.

See pages Section 5-8 for the details and pin descriptions of JF1.
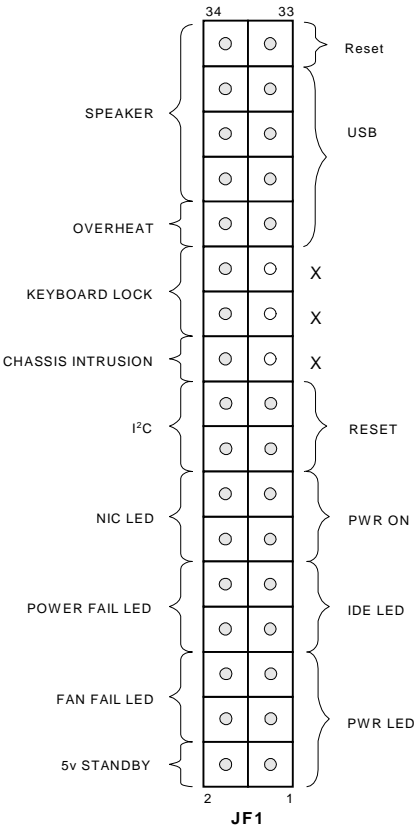
Figure 5-1 P4DC6+ Front Control Panel Header Pins

5-4   I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.
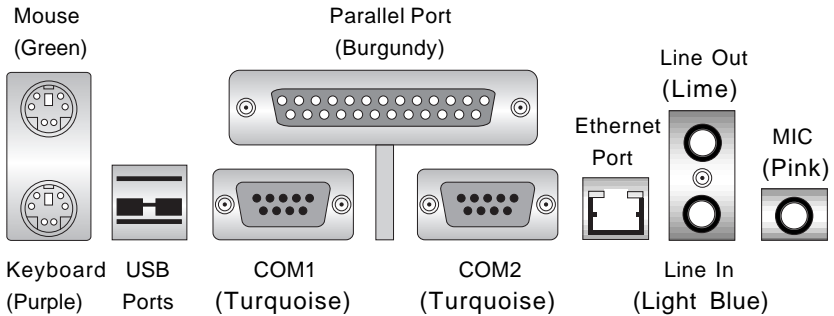
Figure 5-2 P4DC6+ Rear Panel I/O Ports

5-5   Installing Processors

Avoid placing direct pressure to the top of the pro cessor package.   Always connect the power cord last and always remove it before adding, removing or changing any hardware components.

1.   Installing the FCPGA processors:

The P4DC6+ has two 603-pin CPU sockets to support either one or two Intel Xeon™ 1.5 - 2.4+ GHz processors at a front bus speed of 400 MHz. Lift the lever on the socket and insert the processor keeping the notched corner oriented toward pin one on the socket.   Make sure the processor is fully seated in the socket and   then close the lever.   You can also install a single processor on the motherboard without changing any jumper settings.   (See Figure 5-3 for views of a CPU socket before and after processor installation.)

Figure 5-3   CPU Socket: Empty and with Processor Installed
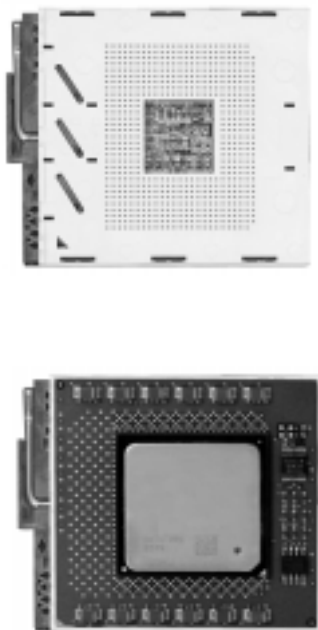
2.   Attaching heatsinks to the processors:

Two passive heatsinks (one for each processor) have been included with your SuperServer 6022C. Secure a heatsink to each processor with a suitable thermal compound to best conduct the heat from the processor to the heatsink. Make sure that you apply the compound evenly and that good contact is made between the CPU chip (the die) and the heatsink. Insufficient contact or improper types of heatsinks and/or thermal compounds can cause the processor to overheat, which may crash the system. See figure 5-4 for heatsink installation diagrams.

3.   Removing the processors:

To remove the processors from the motherboard, simply follow the installation process in reverse order.
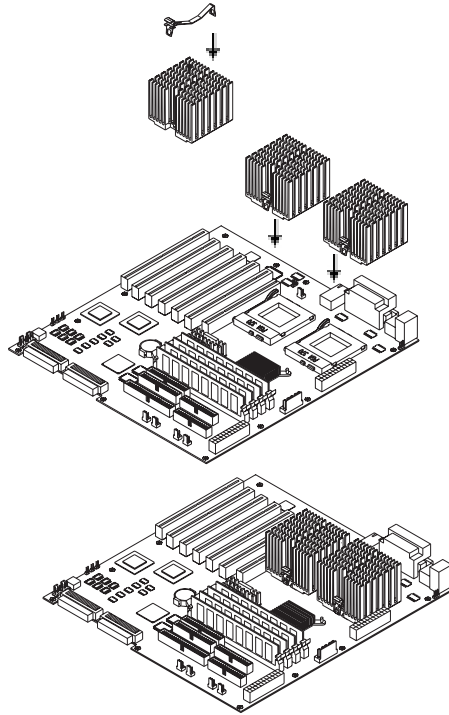
Figure 5-4   Heatsink Installation

5-6   Installing Memory

<div style="border:1px solid red">⚠ !</div>

CAUTION! Exercise extreme care when installing or removing RIMM modules to prevent any possible damage.

Note: Check the Supermicro web site for recommended memory modules:
http://www.supermicro.com/TECHSUPPORT/FAQs/Memory_vendors.htm

---

CAUTION

Exercise extreme care when installing or removing RIMM
modules to prevent any possible damage. Also note that the
memory is interleaved to improve performance (see step 1).

RIMM Installation (See Figure 2-2)

1. Insert either two or four RIMMs (RAMBUS Inline Memory Modules) as
   required for the desired system memory. Two-way interleaved
   memory requires that memory modules be installed in pairs(first in the
   two slots of Bank0 and then in both slots of Bank1, if needed).
2. Insert each RIMM module vertically into its slot. Pay attention to the
   two notches along the bottom of the module to prevent inserting the
   module incorrectly.
3. Gently press down on the RIMM module until it snaps into place in the
   slot. Repeat for all modules (see step 1 above).

Support
The P4DC6+ supports PC600 and PC800 RDRAM memory. RIMM modules
must be installed in two banks at a time starting with Bank0). Both
modules within a single bank must be of the same size and speed.

Figure 5-5b.   Top View of RIMM Slot
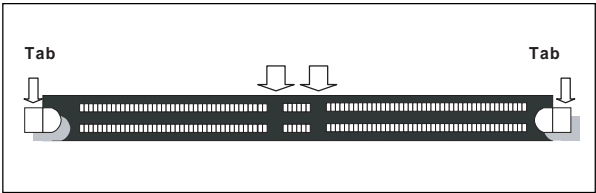
Figure 5-5a.   Side View of RIMM Installation into Slot
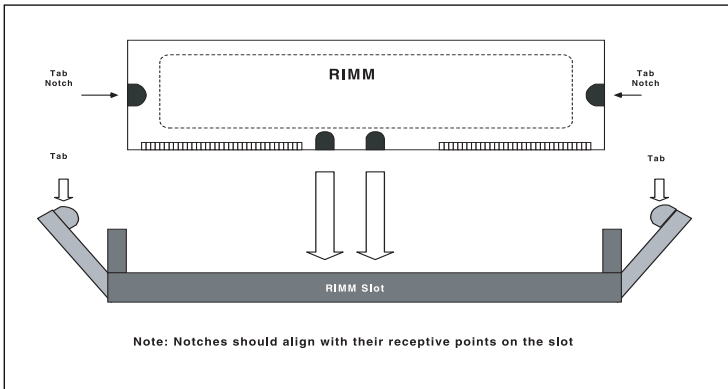
To Install: Insert module vertically and press down until it snaps into
place. Pay attention to the bottom notches.
To Remove: Use your thumbs to gently push each release tab outward
to free the RIMM from the slot.

5-7   Adding PCI Cards

1.   64-bit PCI slots:
The P4DC6+ system board has two 64-bit, 33/66 MHz (3.3V) and four 32-
bit, 33 MHz (5V) PCI slots that require **low profile PCI cards** to fit inside
the Supermicro SC822 chassis - see figures 5-6a and 5-6b.

2.   64-bit PCI card installation:
Before installing a PCI add-on card, make sure you choose the correct
low profile card for the type of PCI card you are installing (see Step 1,
above). Begin by removing the I/O shield for the PCI slot. Insert the PCI
card into the PCI slot on the motherboard, pushing down with your
thumbs evenly on both sides of the card. Finish by using a screw to
secure the top of the card shield to the chassis. The I/O shield protects
the motherboard and its components from EMI (electromagnetic interfer-
ence) and aids in proper ventilation, so make sure there is always a
shield covering each slot.
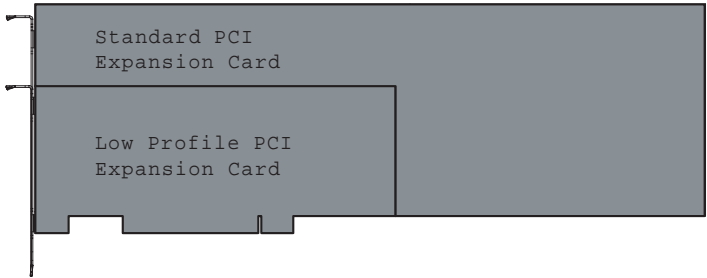
Standard PCI and Low Profile PCI Expansion Card

Figure 5-6a   Low Profile vs. Standard PCI Card Form Factor
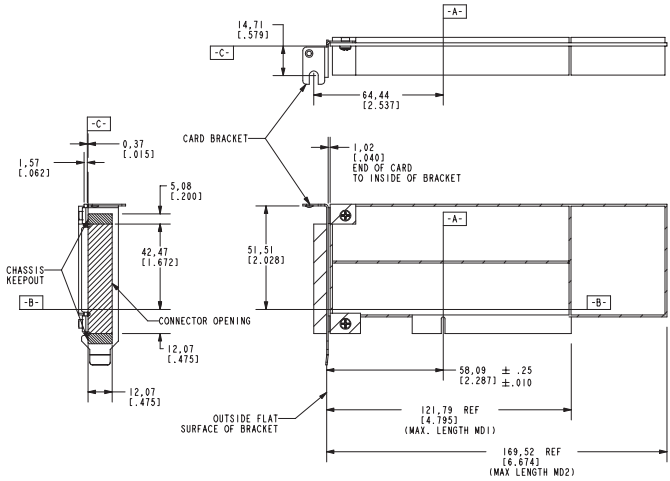
Figure 5-6b   Low Profile PCI Card Dimensions

Notes

Figure 5-7 SUPER P4DC6+ Layout
(not drawn to scale)
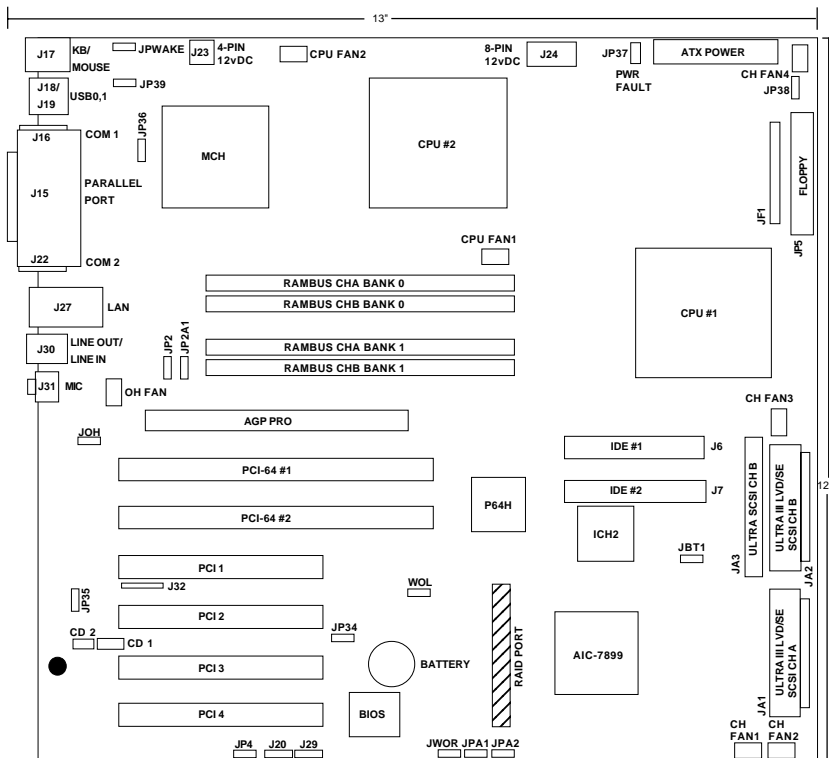
See Figures 5-1 and 5-2 for the locations of the I/O ports and the Front Control Panel (JF1 and JF2) connectors, respectively.

P4DC6+ Quick Reference

Jumpers	**Description**	**Default Setting**
JBT1	CMOS Clear	Pins 1-2 (Normal)
JP2, JP2A1	Manufacturer Setting	Pins 1-2 (Auto)
JPA1, A2	SCSI Termination	Open (Enabled)
JPA3	64-bit PCI Speed Select	Open (66 MHz)
JP4	Onboard Audio	Pins 1-2 (Enabled)
JP34	SCSI Enable/Disable	Pins 1-2 (Enabled)
JP35	LAN Enable/Disable	Pins 1-2 (Enabled)
JP36	Manufacturer Setting	Pins 1-2 (Enabled)
JP38	Third Power Supply Fail Alarm	Open (Disabled)
JP39	USB Wake Up	Pins 1-2 (Enabled)
JPWAKE	Keyboard Wake Up	Pins 1-2 (Disabled)

Connectors	**Description**
ATX POWER #1	Primary ATX Power Connector
CD1, CD2	Audio CD Inputs
COM1/COM2	COM1/COM2 Serial Port Connector
CPU1/CPU2	CPU #1 and CPU #2 Sockets
CPU/CH/OH FAN	CPU/Chassis/Overheat Fan Headers
J6, J7	IDE #1, IDE #2 Connector
J15	Parallel (Printer) Port
J17	PS/2 Keyboard/Mouse Connector
J20, J29	USB Headers 3 and 4
J23	4-Pin 12vDC Power Connector
J24	8-Pin 12vDC Power Connector
J27	LAN (Ethernet) Port
J30	Line In/Line Out Jacks
J31	Microphone Jack
J32	Infrared Connector
JA1	Ultra160 LVD SCSI CH A Connector
JA2	Ultra160 LVD SCSI CH B Connector
JA3	Ultra SCSI CH B Connnector
JF1	Front Control Panel
JOH	Overheat LED
JP5	Floppy Disk Drive Connector
JP37	Power Fail Connector
JWOR	Wake-on-Ring Header
USB0, USB1	USB Ports 1 and 2

5-8 Connector Definitions

Power Supply Connectors

After mounting the motherboard and adding the memory and PCI cards, you are ready to connect the cables. The primary power supply connector on the P4DC6+ meets the SSI (Superset ATX) 24-pin specification and also supports an ATX 20-pin connector. The 20-pin plugs and 24-pin sockets are keyed to ensure proper connection. PWR_SEC should be used when you have dual CPUs. See the table on the right for pin definitions.

Pin 24   Pin 13

Pin 12   Pin 1
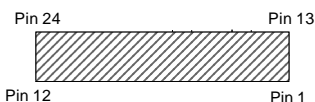
(Using an SSI* 24-pin connector)

Pin 20   Pin 11

Pin 10   Pin 1
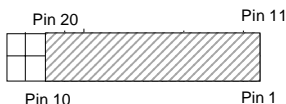
(Using an ATX 20-pin connector)

Important !! The P4DC6+ must be connected to supplemental 12v power with the 4-pin J23 connector and the 8-pin J24 connector. Failure to use a power supply without such supplemental 12v power will result in CPU instability after only a few minutes of operation.

* SSI = Server System Infrastructure, a specification for chassis power supplies. Get more info at http://www.ssiforum.org

ATX Power Supply 24-pin Connector Pin Definitions (ATX Power #1)

Pin Number	Definition	Pin Number	Definition
13	+3.3v	1	+3.3v
14	-12v	2	+3.3v
15	GND	3	GND
16	PS_ON#	4	+5v
17	GND	5	GND
18	GND	6	+5v
19	GND	7	GND
20	Res(NC)	8	PWR_OK
21	+5v	9	5vSB
22	+5v	10	+12v
23	+5v	11	+12v
24	GND	12	+3.3v

ATX Power Supply 20-pin Connector Pin Definitions (ATX Power #1)

Pin Number	Definition	Pin Number	Definition
11	+3.3v	1	+3.3v
12	-12v	2	+3.3v
13	GND	3	GND
14	PS_ON	4	+5v
15	GND	5	GND
16	GND	6	+5v
17	GND	7	GND
18	-5v	8	PW-OK
19	+5v	9	5vSB
20	+5v	10	+12v

4-Pin +12v Power Supply Connector (J23)

Required connection

Pins	Definition
1 & 2	Ground
3 & 4	+12v

8-Pin +12v Power Supply Connector (J24)

Required connection

Pins	Definition
1 thru 4	Ground
5 thru 8	+12v

P/S Wire Definitions

Color	Definition
Orange	+3.3v
Black	Ground
Red	5v
White	Power OK
Yellow	+12v
Purple	5v standby
Brown	-5v
(For reference only)	

PWR LED

The power LED connection is lo-
cated on pins 1, 3 and 5 of JF1.
This connector attaches to the
LED on the chassis that indicates
the computer is powered on. See
the table on the right for pin defini-
tions.

Power LED Pin Definitions (JF1)

Pin Number	Definition
1	+3.3v
3	NC
5	Signal

IDE Hard Drive LED

The hard drive LED connection is
located on pins 7 and 9 of JF1.
Attach the IDE hard drive LED
cable to these pins to display IDE
hard drive activity. See the table
on the right for pin definitions.

IDE LED Pin Definitions (JF1)

Pin Number	Definition
7	+5v
9	Signal

PWR_ON

The PW_ON connection is located
on pins 11 and 13 of JF1. Momen-
tarily contacting both pins will
power on/off the system. The
user can also configure this but-
ton to function as a suspend but-
ton (see the "Power Button Mode"
setting in BIOS). To turn the
power off when set to suspend
mode, hold down the power but-
ton for at least four seconds. See
the table on the right for pin defini-
tions.

PW_ON Pin Definitions (JF1)

Pin Number	Definition
11	PWR_ON
13	Ground

Reset

The reset connection is located on
pins 15 and 17 of JF1. This con-
nector attaches to the hardware
reset switch on the computer
chassis. See the table on the right
for pin definitions.

Reset Pin Definitions (JF1)

Pin Number	Definition
15	Reset
17	Ground

USB Keyboard

If you are using a USB keyboard, connect it to pins 25, 27, 29 and 31 of JF1. See the table on the right for pin definitions.

USB Keyboard Pin Definitions (JF1)

Pin Number	Definition
25	USB Power
27	USB Negative
29	USB Positive
31	Ground

Alarm Reset

Pin 33 of JF1 can be used to attach an alarm reset switch to your chassis. See the table on the right for pin definitions.

Alarm Reset Pin Definitions (JF1)

Pin Number	Definition
33	Reset Signal

Fan Fail LED

Connect the proper fan cable to pins 4 and 6 of JF1 for LED indication of a fan failure. You will need a fan fail cable (not included) to use this connection. See the table on the right for pin definitions.

Fan Fail LED Pin Definitions (JF1)

Pin Number	Definition
4	5v
6	Signal

Power Fail LED

Connect the proper cable to pins 8 and 10 of JF1 for LED indication of a power failure. You will need the proper power cable (not included) to use this connection. See the table on the right for pin definitions.

Power Fail LED Pin Definitions (JF1)

Pin Number	Definition
8	5v
10	Signal

NIC LED

The Network Interface Controller LED connection is located on pins 12 and 14 of JF1. Attach the NIC LED cable to these pins to display network activity. See the table on the right for pin definitions.

Power Fail LED Pin Definitions (JF1)

Pin Number	Definition
12	3.3v Stby
14	Signal

I²C

The I²C connection is located on pins 16 and 18 of JF1. See the table on the right for pin definitions.

I²C Pin Definitions (JF1)

Pin Number	Definition
16	Bus Data
18	Bus Clock

Chassis Intrusion

The chassis intrusion header is located on pin 20 of JF1. See the board layouts in Chapter 1 for its location. See the table on the right for pin definitions.

Chassis Intrusion Pin Definitions (JF1)

Pin Number	Definition
20	Intrusion Input

Keyboard Lock

The keyboard lock connection is located on pins 22 and 24 of JF1. See the table on the right for pin definitions.

Keyboard Lock Pin Definitions (JF1)

Pin Number	Function	Definition
22	Keylock	Keyboard inhibit +5v
24	Ground	Black wire

Overheat

A chassis overheat header is located on pin 26 of JF1. See the table on the right for pin definitions.

Overheat Pin Definitions (JF1)

Pin Number	Definition
26	Overheat Input

Speaker

The speaker connector is located on pins 28, 30, 32 and 34 of JF1. See the table on the right for pin definitions.

Speaker Pin Definitions (JF1)

Pin Number	Function	Definition
28	Power	3.3v
30	NC	NC
32	NC	NC
34	Spkr Out	Data

Note: NC indicates No Connection

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located at J17. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 5-2 for locations.)

PS/2 Keyboard and Mouse Port Pin Definitions (J17)

Pin Number	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Universal Serial Bus (USB)

Two Universal Serial Bus connectors (USB0 and USB1) are located at J18 and J19. See the table on the right for pin definitions. The P4DC6+ also provides support for two additional USB ports: the USB2 (J20) and USB3 (J29) headers are located near the CNR slot.

Universal Serial Bus Pin Definitions

J18 Pin#	Definition	J19 Pin#	Definition
1	+5v	1	+5v
2	P0-	2	P0-
3	P0+	3	P0+
4	Ground	4	Ground

USB2 & USB3 (J20, J29)

Pin Number	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	Ground

Serial Ports

Two serial connectors are provided on your board: COM1 (J16) and COM2 (J22). See the table on the right for pin definitions.

Serial Port Pin Definitions
COM1 & COM2 (J16, J22)

Pin Number	Definition	Pin Number	Definition
1	DCD	6	DSR
2	Serial In	7	RTS
3	Serial Out	8	CTS
4	DTR	9	RI
5	Ground	10	NC*

Wake-On-LAN

The Wake-On-LAN header is marked WOL. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this function. (You must also have a LAN card with a Wake-on-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (WOL)

Pin Number	Definition
1	+5v Standby
2	Ground
3	Wake-up

CD Headers

There are two CD headers of different sizes on the motherboard for audio CD playback. You must connect an audio cable from your CD player to the header that fits your cable's connector. See the table on the right for pin definitions.

Audio CD Header Pin Definitions (CD1)

Pin Number	Definition
1	Left Stereo Signal
2	Ground
3	Ground
4	Right Stereo Signal

Audio CD Header Pin Definitions (CD2)

Pin Number	Definition
1	Right Stereo Signal
2	Ground
3	Ground
4	Left Stereo Signal

Fan Headers

The CPU fans, chassis fans and thermal control fan headers are designated CPU FAN #1/#2, Chassis Fan 1/2/3/4 and OH Fan respectively. See the table on the right for pin definitions.

Fan Header (CPU Fan 1-2, Chassis Fan 1-4, OH Fan) Pin Definitions

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

Caution: These fan headers are for DC power only.

Overheat LED (JOH)

The JOH header is used to connect an LED to provide warning of chassis overheating. It is located near the microphone connector. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH)

Pin Number	Definition
1	12vDC
2	OH Active

Infrared Connector

The infrared connector is located at J32. See the table on the right for pin definitions. See the Technical Support section of our web site for information on the infrared devices you can connect to the system.

Infrared Pin Definitions (J32)

Pin Number	Definition
1	+5v
2	Key
3	IRRX
4	Ground
5	IRTX

Wake-On-Ring

The Wake-On-Ring header is desig-
nated as JWOR on the P4DC6+. This
function allows your computer to re-
ceive and be "awakened" by an incom-
ing call when in the suspend state.
See the table on the right for pin defi-
nitions. You must also have a WOR
card and cable to use WOR.

Wake-On-Ring Pin Definitions (JWOR)

Pin Number	Definition
1	Ground
2	Wake-up

5-9   Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings.   Jumpers create shorts between two pins to change the function of the connector they are located on.   **Pin 1 is always identified with a square solder pad on the printed circuit board.** See the motherboard layout pages for jumper locations.
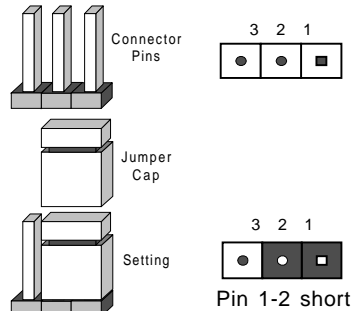
CMOS Clear

See the table on the right for instructions on how to clear CMOS. Always remove the AC power cord from the system before clearing CMOS.

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord, and then use JBT1 to clear CMOS. Replace JBT1 back to the pin 1-2 position before powering up the system again. <u>Do not</u> use the PW_ON connector to clear CMOS.
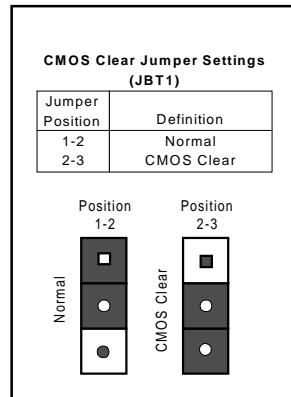
Keyboard Wake-Up

The JPWAKE jumper is used to-
gether with the Keyboard Wake-
Up function in BIOS. Enable both
the jumper and the BIOS setting to
allow the system to be woken up
by depressing a key on the key-
board. See the table on the right
for jumper settings.

Note: Your power supply must
meet ATX specification 2.01 or
higher and supply 720mA of
standby power to use this fea-
ture.

**Keyboard Wake-Up
Jumper Settings
(JPWAKE)**

Jumper Position	Definition
1-2	Disabled
2-3	Enabled

USB Wake-Up

Jumper JP39 is used in conjunc-
tion with the Keyboard Wake-Up
function in BIOS when you wish
to wake the system up with a USB
keyboard that has been connected
to a USB port (not header). Set
JP39 to pins 1-2 to support USB
keyboard wake-up and resume
from ACPI S1 mode and pins 2-3
pins to support USB keyboard
wake-up and resume from ACPI
S3 mode. See the table on the
right for jumper settings.

Note: Your power supply must
provide 5v of standby voltage with
at least 1A to use this feature.

**USB Wake-Up
Jumper Settings (JP39)**

Jumper Position	Definition
1-2	5v
2-3	5v Standby

SCSI Termination Enable/ Disable

The SCSI Termination jumpers (JPA1 and JPA2) allow you to enable or disable termination for the SCSI connectors. The normal (default) position is open to enable SCSI termination. See the table on the right for jumper settings.

SCSI Termination Enable/Disable Jumper Settings (JPA1, JPA2)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

Onboard Audio

You may want to disable the onboard speaker. Jumper JP4 gives you this option. See the table on the right for jumper settings.

Speaker Enable/Disable Jumper Settings (JP4)

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN (NIC) Enable/Disable

Change the setting of jumper JP35 to enable or disable the onboard LAN or NIC (Network Interface Card) on your motherboard. See the table on the right for jumper settings.

LAN (NIC) Enable/ Disable Jumper Settings (JP35)

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SCSI Enable/Disable

Change the setting of jumper JP34 to enable or disable the onboard SCSI on your motherboard. See the table on the right for jumper settings.

SCSI Enable/Disable Jumper Settings (JP34)

Jumper Position	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Third Power Supply Failure Alarm Enable/Disable

The system will notify you in the event of a power supply failure. This feature assumes that three power supply units are installed in the chassis, with one acting as a backup. If you only have one or two power supply units installed, you should disable this with JP38 to prevent false alarms. See the table on the right for jumper settings.

Power Supply Failure Alarm Enable/Disable Jumper Settings (JP38)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

64-bit PCI Speed Select

Jumper JPA3 allows you to change the speed of the 64-bit PCI slot. The default setting is 66 MHz. **Note:** If you have installed a RAID card into the RAID adapter port and a PCI slot into the 64-bit 66 MHz PCI slot, you must set this jumper to 33 MHz. See the table on the right for jumper settings.

64-bit PCI Speed Select Jumper Settings (JPA3)

Jumper Position	Definition
Open	66 MHz
Closed	33 MHz

5-10 Parallel Port, AGP and Floppy/Hard Disk Drive Connections

Use the following information to connect the floppy and hard disk drive cables.

• The floppy disk drive cable has seven twisted wires.

• A red mark on a wire typically designates the location of pin 1.

• A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A and the connector that does not have twisted wires always connects to drive B.

• The 80-wire ATA66/100 IDE hard disk drive cable that came with your system has two connectors to support two drives. This special cable should be used to take advantage of the speed this advanced technology offers. The blue connector connects to the onboard IDE connector interface and the other connector(s) to your hard drive(s). The middle connector is for the slave device and the remaining connector is for the master device. Consult the documentation that came with your disk drive for details on actual jumper locations and settings for the hard disk drive.

Parallel Port Connector

The parallel port is designated as J15. See the table on the left for pin definitions.

Parallel (Printer) Port Pin Definitions (J15)

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Floppy Connector

The floppy connector is desig-
nated as JP5. See the table on
the right for pin definitions.

Floppy Connector Pin Definitions (JP5)

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDIN
3	GND	4	Reserved
5	Key	6	FDEDIN
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

IDE Connectors

IDE Connector Pin Definitions (J6, J7)

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

There are no jumpers to config-
ure the onboard IDE interfaces
J6 and J7. See the table on the
left for pin definitions. You
must use the ATA100/66 cable
included with your system to
benefit from the ATA100/66
technology.

AGP Slot

The AGP Pro slot is backward compatible with AGP Pro and 4xAGP graphics cards, which have fewer pins than AGP Pro cards. Because of this, care must be taken when installing a graphics card into this slot, as doing so incorrectly can damage your motherboard. For AGP Pro cards, you should remove the orange sticker covering one end of the slot. For other cards, leave this sticker in place and make sure your card does not plug into the section it covers. A general rule of thumb is to make sure your card fills the section of pins nearer the center of the motherboard first, then the end toward the edge of the motherboard if there are more pins not seated. If the I/O shield of your card is flush with the edge of the motherboard, the card should be inserted correctly.

AGP Pro Slot (1.5V)

Edge of motherboard
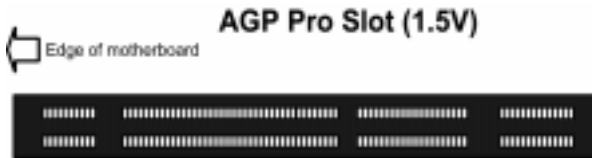
50-pin Legacy SCSI Connector Ultra Wide SCSI Connector

See the table on the right for pin definitions of the 50-pin Legacy SCSI connector located at JA3.

50-pin Legacy SCSI Connector Pin Definitions (JA3)

Pin Number	Function	Pin Number	Function
1	GND	26	-DB (0)
2	GND	27	-DB (1)
3	GND	28	-DB (2)
4	GND	29	-DB (3)
5	GND	30	-DB (4)
6	GND	31	-DB (5)
7	GND	32	-DB (6)
8	GND	33	-DB (7)
9	GND	34	-DB (P)
10	GND	35	GND
11	GND	36	GND
12	Reserved	37	Reserved
13	Open	38	Termpwr
14	Reserved	39	Reserved
15	GND	40	GND
16	GND	41	-ATN
17	GND	42	GND
18	GND	43	-BSY
19	GND	44	-ACK
20	GND	45	-RST
21	GND	46	-MSG
22	GND	47	-SEL
23	GND	48	-C/D
24	GND	49	-REQ
25	GND	50	-I/O

Ultra Wide SCSI Connector

See the table below for the Ultra Wide SCSI pin definitions. The connectors are located at JA1 and JA2.

Ultra Wide SCSI Connector (JA1, JA2)

Pin Number	Function	Pin Number	Function
1	GND	35	-DB (12)
2	GND	36	-DB (13)
3	GND	37	-DB (14)
4	GND	38	-DB (15)
5	GND	39	Parity H
6	GND	40	-DB (0)
7	GND	41	-DB (1)
8	GND	42	-DB (2)
9	GND	43	-DB (3)
10	GND	44	-DB (4)
11	GND	45	-DB (5)
12	GND	46	-DB (6)
13	GND	47	-DB (7)
14	GND	48	Parity L
15	GND	49	GND
16	GND	50	Termpwrd
17	Termpwrd	51	Termpwrd
18	Termpwrd	52	Termpwrd
19	GND	53	NC
20	GND	54	GND
21	GND	55	-ATTN
22	GND	56	GND
23	GND	57	-BSY
24	GND	58	-ACK
25	GND	59	-RST
26	GND	60	-MSG
27	GND	61	-SEL
28	GND	62	-CD
29	GND	63	-REQ
30	GND	64	-IO
31	GND	65	-DB (8)
32	GND	66	-DB (9)
33	GND	67	-DB (10)
34	GND	68	-DB (11)

5-11 Installing Software Drivers

After all the hardware has been installed, you must first install the operating system and then the software drivers. The necessary drivers are all in-cluded on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CDROM drive, the display shown in Figure 2-6 should appear. (If this display does not appear, click on the My Com-puter icon and then on the icon representing your CDROM drive. Finally, double click on the S "Setup" icon.)
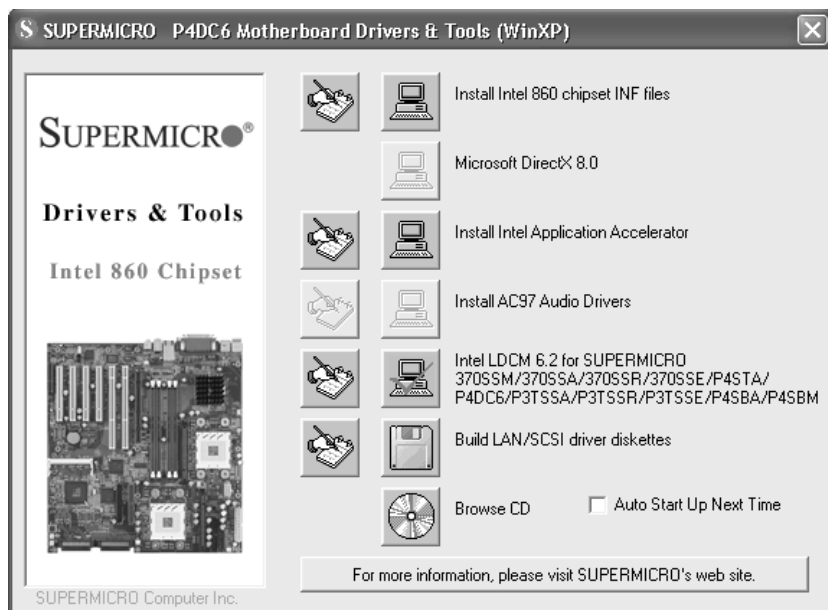
Figure 5-8. Driver/Tool Installation Display Screen

Click the icons showing a hand writing on paper to view the readme files for each item. Click the tabs to the right of these *in order from top to bottom* to install each item one at a time. **After installing each item, you must reboot the system before moving on to the next item on the list.** You should install everything here except for the SUPER Doctor utility, which is optional. The Security and Graphics Drivers support multiple lan-guages. Click the arrows to pull down a menu of choices. The bottom icon with a CD on it allows you to view the entire contents of the CD.
Note: The memory size reported in the device manager may be less than expected because some is used by the onboard graphics. Higher screen resolutions will take up more of this memory.

Notes

Chapter 6
Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC822 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required
The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1   Static-Sensitive Devices

Electric Static discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

Precautions

● Use a grounded wrist strap designed to prevent static discharge.
● Touch a grounded metal object before removing any board from its anti-static bag.
● Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
● When handling chips or modules, avoid touching their pins.
● Put the motherboard, add-on cards and peripherals back into their anti-static bags when not in use.
● For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.
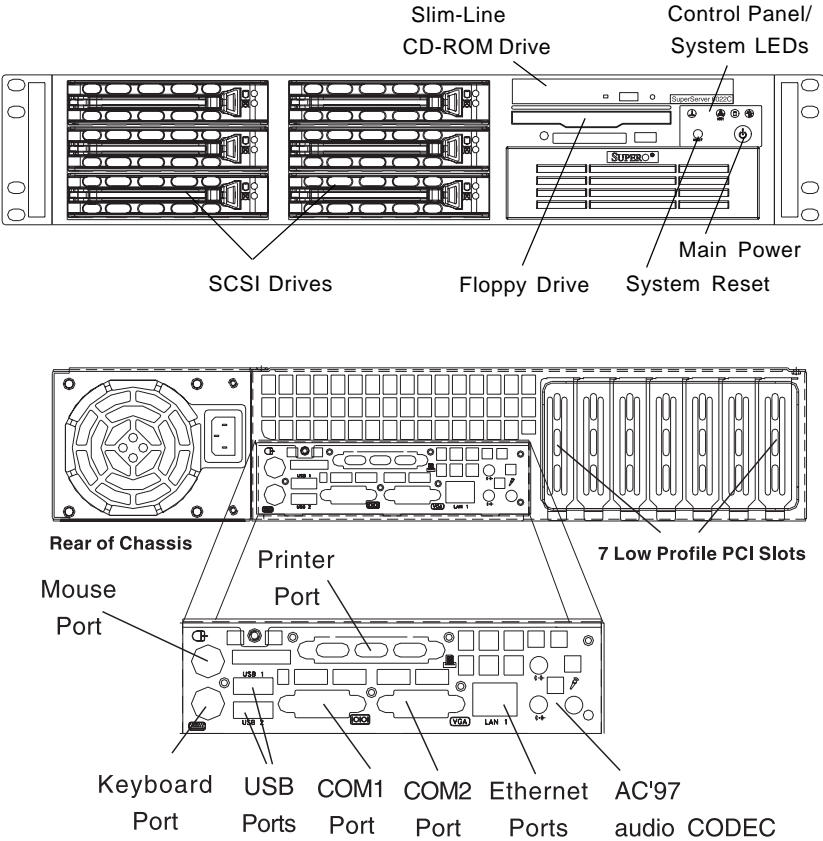
Figure 6-1. Front and Rear Chassis Views

6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the motherboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the motherboard to JP4 on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both JF1 and JP4. Pull all excess cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 (System Interface) for details on the LEDs and the control panel buttons. Details on JF1 can be found in the Chapter 5 (Advanced Motherboard Installation).

6-3 System Fans

Four 8-cm fans provide all the cooling needed for the SuperServer 6022C. It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis. See Figure 6-3.

System Fan Failure

The fans run at 3400 rpm. If a fan fails, the ambient air temperature in the chassis will rise and activate the overheat LED on the control panel. Replace any failed fan immediately. The hot plug fans will start to function upon connection to its fan header on the P4DC6+ motherboard.

Replacing System Cooling Fans

1.   Removing a fan:
Remove the chassis cover. Press the tabs on the top of the fan housing and remove the fan and its housing. The system power need not be shut down since the fans are all hot-pluggable on the P4DC6+ motherboard.

2.   Installing a new fan:
Replace the failed fan with an identical 8-cm, 12 volt fan (available from Supermicro). Position the new fan at its proper place in the chassis, by fitting the fan with its housing onto the fan mounts in the chassis. A "click" can be heard if the fan in its housing is properly installed. If the system power is on, the fan will start immediately upon being connected to its header on the P4DC6+ motherboard, with its hot-changeable fan feature.
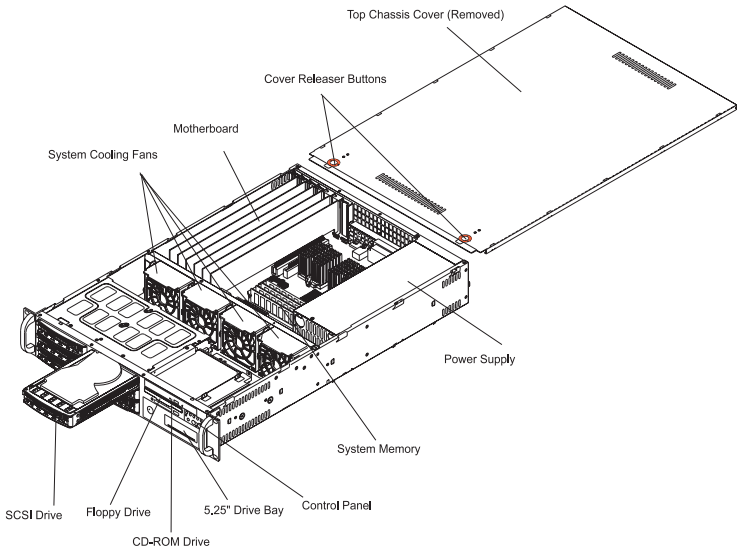
Figure 6-3. System Cooling Fans

6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

SCSI Drives: You do not need to access the inside of the chassis to replace or swap SCSI drives. Proceed to the next section for instructions.

 Note: You must use standard 1" high, 80-pin SCA SCSI drives in the SuperServer 6022C.

CD-ROM/Floppy Disk Drive: For installing/removing the CD-ROM or floppy disk drive, you will need to gain access to the inside of the 6022C by removing the top cover of the chassis. Proceed to the "CD-ROM and Floppy Drive Installation" section later in this chapter for instructions.

SCSI Drive Installation

1.   Mounting a SCSI drive in a drive carrier:
The SCSI drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the SCSI drive bays. For this reason, <u>even empty carriers without SCSI drives installed must remain in the chassis</u>. To add a new SCSI drive, install a drive into the carrier with the printed circuit board side toward the carrier so that the mounting holes align with those in the carrier. Secure the drive to the carrier with four screws, as shown in Figure 6-4.

step 1.   step 2.   step 3.
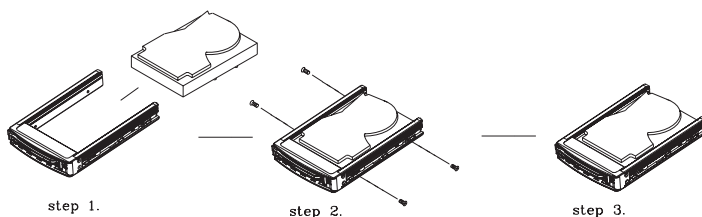
Figure 6-4. Mounting a SCSI Drive in a Carrier

Use caution when working around the SCSI backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

Important: Regardless of how many SCSI hard drives are installed, all SCSI drive carriers must remain in the drive bays to maintain proper airflow.

2.   Installing/removing hot-swap SCSI drives:

One SCSI drive bay is located in the front of the chassis, making it easily accessible for installation and removal. The SCSI drive is a hot-swap unit, meaning that it can be installed and removed while the system is running. To remove a SCSI drive, first push the release button located beside the drive's LEDs, then swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-5).

Release Button

Handle
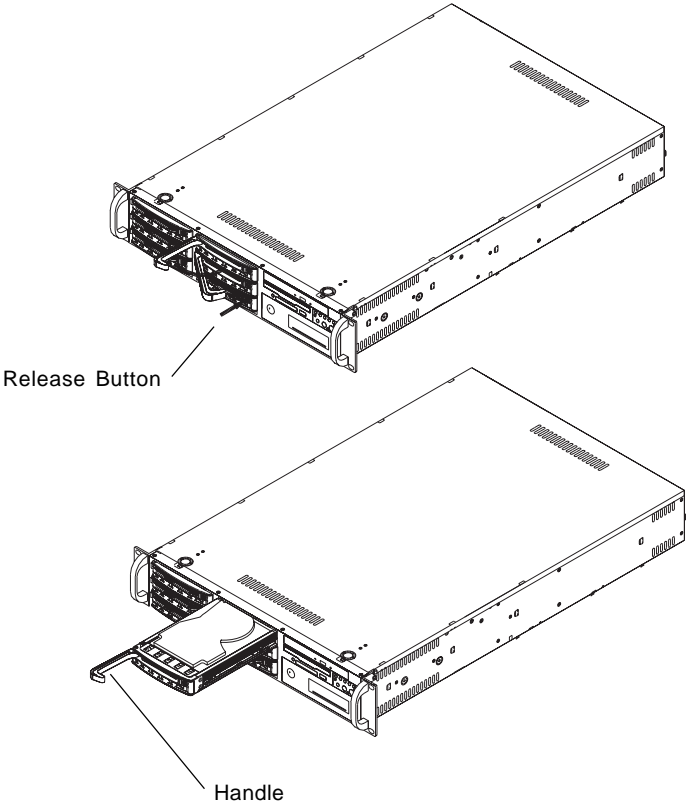
Figure 6-5.   Removing SCSI Drives

!   **Important: All of the SCSI drive carriers must remain in the drive bay to maintain proper cooling airflow.**

SCSI Power Cables

SCSI power cables should be routed so that they do not block the airflow through the chassis. There is a 4-pin connector for the power cables.

SCA Backplane

The SCSI drives plug into an SCA backplane that provides power, SCSI ID and bus termination. A RAID controller can be used with the SCA backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drive. The SCA SCSI backplane is already preconfigured, so it has no jumpers or switches.

CD-ROM and Floppy Drive Installation

The top cover of the chassis must be opened to gain full access to the CD-ROM and floppy drive bays. The 6022C accomodates only slim-line 5.25-inch CD-ROM drives. Side mounting brakets are typically needed to mount a slim-line CD-ROM drive in a 6022C server.

First, release the retention screws that secure the server unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. You must power down the system before installing or removing floppy or IDE components.

Drives mount on rails and should "click" into place to be correctly and fully installed in their bays.

• The floppy disk drive cable has seven twisted wires.

• A color mark on a cable typically designates the location of pin 1.

• A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Installing Components into the 5.25" Drive Bay

You may want to install a component in the 5.25" drive bay. If so, remove the 5.25" drive bay cover by pressing the tab on the corner of the drive bay and then pushing the bay outward from the inside. Remove the drive bay rails. Install the rails onto the new component as shown in Figure 6-6 and then slide the new component into the drive bay until you hear a clicking sound.

Figure 6-6. Attaching 5.25" Drive Bay Rails to a New Component (CD-ROM in the example)
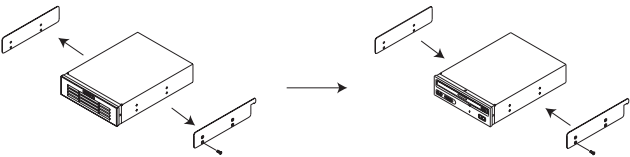
6-5 Power Supply

The SuperServer 6022C has a single 400 watt power supply. This power supply has an auto-switching capability, which enables it to automatically sense and operate at any voltage between 110 to 220 volts. A power on/ off switch is located at the back of the power supply. Turning this power switch to the off position will remove both main and standby power from the system.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro. See contact information in Chapter 1.

Removing/Replacing the Power Supply

1.   Removing the power supply:
First unplug the power cord from the system.   remove the chassis cover by pressing the two release buttons on the top of the chassis, near the fron, and push the chassis top rearward about one inch. To remove the failed power unit, unplug the power cord that connects to the power supply. Then, remove all screws that connect the power supply to the chassis (two at the rear, two at the side, and one on the bottom). The power supply can then be lifted straight upward from the chassis.

2.   Installing a new power supply:
Replace the failed unit with another unit of the same input voltage, voltage outputs and Wattage. It is highly recommended to replace it with exactly the same model power supply. Carefully insert the new unit into position in the chassis and secure it with the five screws, as in the paragraph above. Before reconnecting the power cord, make certain that the power switch on the power supply is in the "off" position. Then reconnect the power cord, replace the chassis top cover and reposition the unit back into the rack. Finish by turning the power switch on the power supply "on", and then depress the power button on the chassis front panel.

Power Supply   I/O Backpanel
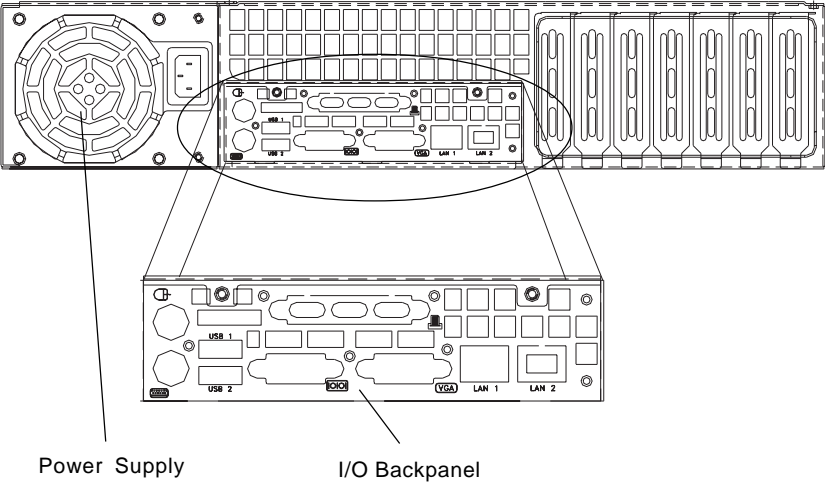
Figure 6-7.   Chassis Rear View

Chapter 7
BIOS

7-1   Introduction

This chapter describes the AwardBIOS™ for the P4DC6+. The Award ROM BIOS is stored in a Flash integrated circuit and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the AwardBIOS™, some settings may have been added or deleted and might not yet be included in this manual. Please refer to the Support Manual Download area of the Supermicro web site http://www.supermicro.com for any changes to the BIOS that may not be reflected in this manual.

System BIOS

The BIOS is the "Basic Input Output System" used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The AwardBIOS™ Flash chip stores the system parameters, such type of disk drives, video displays, etc. in its CMOS memory (CMOS = Complementary Metal Oxide Semiconductor -- a battery-maintained RAM in the BIOS). The CMOS memory, usually refer-enced as just "CMOS", requires very little electrical power. When the com-puter is turned off, a back-up battery provides power to the BIOS Flash chip, enabling it to retain system parameters. Each time the computer is powered-on the computer is configured with the values stored in the BIOS RAM by the system BIOS, which gains control at boot-up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be ac-cessed by pressing <Del> at the appropriate time during system boot (see below).

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Chipset and Power menus. Section 4-3 gives detailed descriptions of each parameter setting in the Setup utility.

7-2   Running Setup

Optimal default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the Main AwardBIOS™ Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

When you first power on the computer, the AwardBIOS™ is immediately activated. While the BIOS is in control, the Setup program can be activated in one of two ways:

1.   By pressing <Del> immediately after turning the system on, or

2.   When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Del> key to activate the Main Setup Menu:

Press <DEL> to enter SETUP

7-3   Main BIOS Setup

All Main Setup options are described in this section. The Main BIOS Setup screen is displayed below.

Use the <Up/Down> arrow keys or the <Tab> key to move among the different settings in the above menu.

Press the <Esc> key to exit the CMOS Setup Menu and use the <Left> <Right> arrow keys to enter other categories of BIOS settings.   The next section describes in detail how to navigate through the menus.

Main BIOS Setup Menu
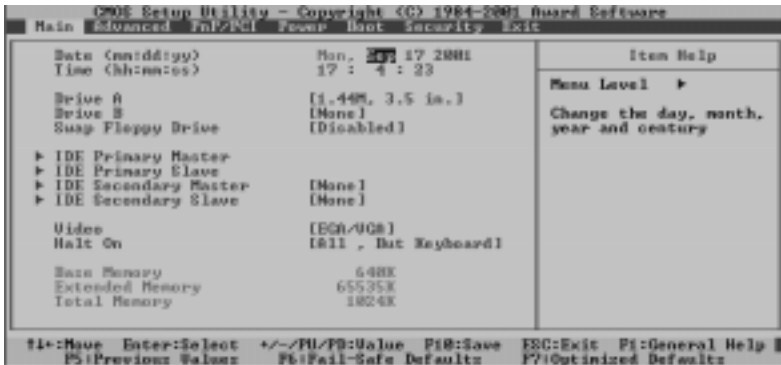
Main Setup Features

Date/Time

Set the system date and time. Key in the correct information in the fields when the options of "mm:dd:yy" and "hh:mm:ss" appear in the screen. Press the <Enter> key to save the data.

Drive A/Drive B

These options allow the user to set the type of floppy disk drive installed in the system. The settings are: "None", "360K, 5.25 in", "1.2M, 5.25 in", "720K, 3.5 in", "1.44M, 3.5 in" and "2.88M, 3.5 in."

Swap Floppy Drive

These options allow the user to swap the names of floppy disk drives installed in the system, should there be two floppy disk drives installed on the main board. The settings are: "Disabled" and "Enabled." The default setting is "**Disabled**."

IDE Primary Master/IDE Primary Slave/IIDE Secondary Master/IDE Secondary Slave

These options allow the user to set the parameters of the IDE Primary Master/ Slave and IDE Secondary Master/Slave slots. Press the <Enter> key to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly.   The items included in the sub-menu are:
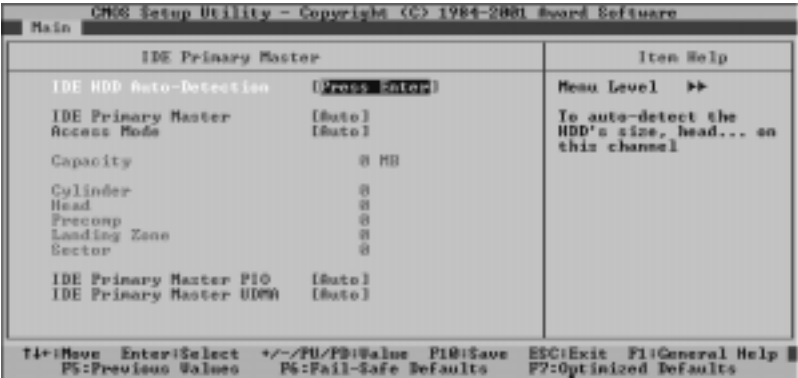
IDE HDD Auto-Detection

Press the <Enter> key to activate the "IDE HDD Auto-Detection" function to automatically detect the status of the IDE HDD installed in the system (such as the sizes of the hard drives).

IDE Primary Master

This option allows the user to determine the manner in which the AwardBIOS™ sets the settings for the IDE Primary Master Device. The settings are "None", "**Auto**" and "Manual."

Access Mode

This item determines the location through which the AwardBIOS™ access the IDE Primary Master Device. The settings are "CHS", "LBA", "Large" and "**Auto"**.

IDE Primary Master PIO/IDE Primary Slave PIO/IDE Secondary Master PIO/IDE Secondary Slave PIO

This IDE PIO (Programmed Input/Output) field allows you to set a PIO mode (0-4) for the IDE Primary device: Mode 0 thorugh Mode 4 Each increase in number indicates a corresponding increase in performance. The settings are "Mode 0", "Mode 1", "Mode 2", "Mode 3", "Mode 4" and "**Auto**."

IDE Primary Master UDMA/IDE Primary Slave UDMA IDE Secondary Master UDMA/IDE Secondary Slave UDMA

This option is available only when your IDE hard drive supports Ultra DMA/33 and the operating environment also includes a DMA drive (Windows 95 OSR2 or a third-party IDE bus master driver). If your IDE hard drive and your system software both support Ultra DMA/33, select "Auto" to enable BIOS support. The settings are "**Auto**" and "Disabled."

Video

This option allows the user to select the setting for the default video device. The settings are "**EGA/VGA**", "CGA 40", "CGA 80" and "MONO."

HaltOn

This option allows the user to select the situation in which you want the BIOS to stop the POST process and notify you about the status of the system. The settings are "All Errors", "No Errors", "**All but Keyboard**", "All but Diskette", and "All but Disk/Key."

Base Memory

This feature displays the amount of conventional memory detected during boot-up. The default setting for this option is "**640K**."

Extended Memory

This feature displays the amount of extended memory detected during boot-up. The default setting for this option is "**65535K**."

Total Memory

This feature displays the amount of total memory available in the system The default setting for this option is "**1024K**."

7-4   Advanced BIOS Setup

Choose "Advanced BIOS Setup" from the AwardBIOS™ Setup Utility main menu with the <Left> <Right> arrow keys. You should see the display below. Select one of the items in the left frame of the screen to go to the sub screen for that item. Advanced BIOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced BIOS Setup options are described in this section.
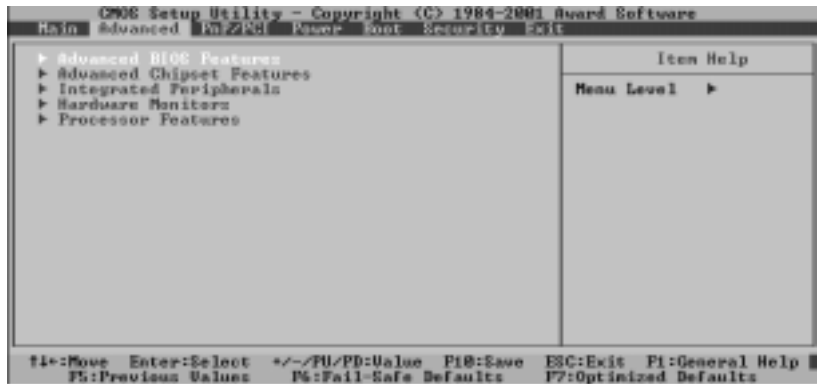
7-4.1   Advanced BIOS Features

When the required item in the "Advanced BIOS Features" is highlighted, press the <Enter> key to activate the selection, as shown below:
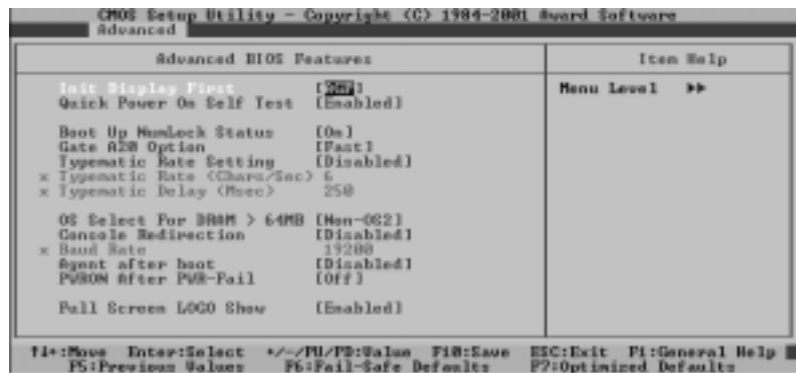
Init Display First

This option allows the user to determine which device will be first displayed when the sytem boots up -- whether it is the device installed in the PCI slot or the device intalled in the AGP slot. The settings are "PCI slot" and "**AGP**."

Quick Power-On Self Test

If enabled, this feature will speed up the POST (Power On Self Test) after the computer is switched on. The settings are "Enabled" and "**Disabled**." If "Disabled", the POST routine will remain in the normal speed.

Boot Up NumLock Status

If enabled, this feature sets the power on state for NumLock. The settings are "**On**" and "Off."

Gate A20 Option

This option allows the user to determine whether the chipset or the keyboard controller should have control over Gate A20. The settings are "Normal" or "**Fast**." If set to "Normal", a pin in the keyboard controller controls Gate A20. If "**Fast**" is selected, the chipset will have control over Gate A20.

Typematic Rate Setting

Continual pressing of a key repeats that character onscreen at a rate pre-determined by the keyboard controller. The key stroke repeating rate is called the "typematic rate." If "Enabled", this option allows the user to set the typematic rate of the system. If "**Disabled**", the user will not be allowed to set the typematic rate and "Typematic Rate" and "Typematic Delay" will not be displayed. The settings are "Enabled" and "**Disabled**."

Typematic Rate (Chars/Sec)

If enabled, this option allows the user to set the number of times a key stroke repeats itself in a second when the key is held down. The settings are "**6**", "8", "10", "12", "15", "20", "24" and "30."

Typematic Delay

This option sets the delay time after a key is held down before it begins to repeat the keystroke. The settings are: "**250**", "500", "750" and "1000."

OS Select For DRAM > 64MB

This option allows the user to select the operating system that requires a DRAM memory greater than 64MB in order to function properly. The settings are "OS2" and "**Non OS2**."

Console Redirection

This option allows the user to redirect the console through the COM port when Enabled. The settings are "Enabled" and "**Disabled**."

Agent After Boot

This option allows the user to keep the agent running after OS boot when Enabled. The settings are "Enabled" and "**Disabled**."
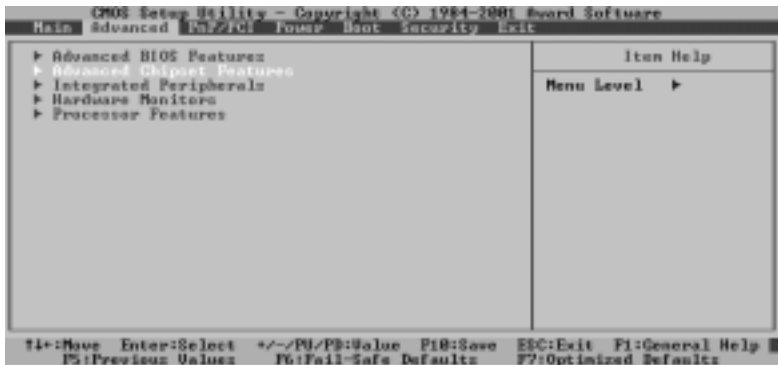
Power On after PWR Fail

This option allows the user to determine if the system's power will be automatically turned "on" or remains "off" after a power failure. The settings are "On", "**Off**" and "Former Status."

Full Screen Logo Show

This option controls whether the logo is displayed when booting up. The settings are "**Enabled**" and "Disabled."

7-4.2   Advanced Chipset Features

This section documents the functions that the AwardBIOS provides the user with in configuring the system based upon the special features offered by the Intel 860 chipset. The Intel 860 chipset manages the operations of the major components of the board, such as the bus speed of the CPU, access to the memory and the communications between the PCI slots and the CPU. Normally, the default settings for the Advanced Chipset Features listed in this section are pre-configured by the manufacturer for optimal system performance. It is not recommended that the user alter the default settings.

This section is provided as an emergency measure for the user to restore the functions of the system when the critical data stored in the BIOS is lost.

When the item in "Advanced Chipset Features" is highlighted, press <Enter> to activate the screen below:
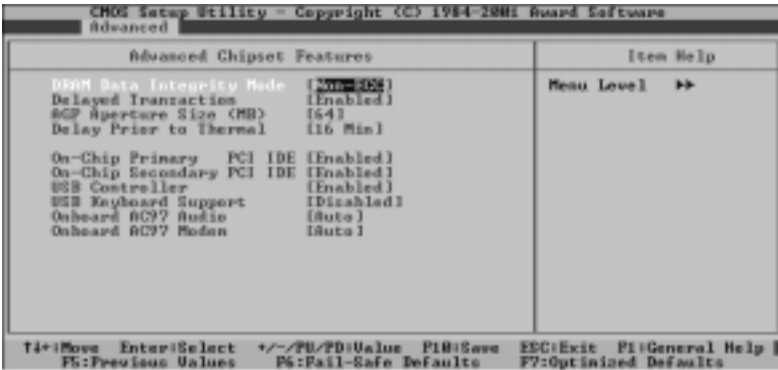
Note: "DRAM" refers to RAMBUS Dynamic RAM

DRAM Data Integrity Mode

This section documents the AwardBIOS management of the bus links between the host and bridge devices. The settings are "ECC" and "**Non-ECC**."

Delayed Transaction

If "Enabled", this option allows the user to activate the BIOS support to allow the system to complete delayed transactions. The settings are "**Enabled**" or "Disabled."

AGP Aperture Size <MB>

This section determines the amount of RAM dedicated to AGP data. The settings are: "4", "8", "16", "32", "**64**", "128" and "256."

Delay Prior to Thermal

This setting determines the time in minutes between the thermal limit being exceeded and the system automatically shutting down. The settings are: "4 min", "8 min", "**16 min**", and "32 min."

On-Chip Primary PCI IDE

If "Enabled", this option allows the user to activate the BIOS to support the On-Chip Primary PCI IDE. The settings are "Disabled" and "**Enabled**."

On-Chip Secondary PCI IDE

If "Enabled", this option allows the user to activate the to BIOS support the On-Chip Secondary PCI IDE. The settings are "Disabled" and "**Enabled**."

USB Controller

If "Enabled", this option allows the user to activate the BIOS to support the USB Controller. The settings are "Disabled" and "**Enabled**."

USB Keyboard Support

If "Enabled", this option allows the user to activate the BIOS to support a USB keyboard at boot-up. The settings are "**Disabled**" and "Enabled."

Onboard AC97 Audio

This option allows you to enable or disable the onboard AC97 audio. The settings are "**Auto**" and "Disabled".

Onboard AC97 Modem

This option allows you to enable or disable the onboard AC97 modem. The settings are "**Auto**" and "Disabled".

Delay Prior to Thermal

This section determines the time in minutes between the thermal limit being exceeded and the system automatically shutting down. The settings are: "4 min", "8 min", "**16 min**", and "32 min."

7-4.3   Integrated Peripherals

Under the "Advanced" section of the BIOS setup, select "Integrated Peripherals", as shown below.
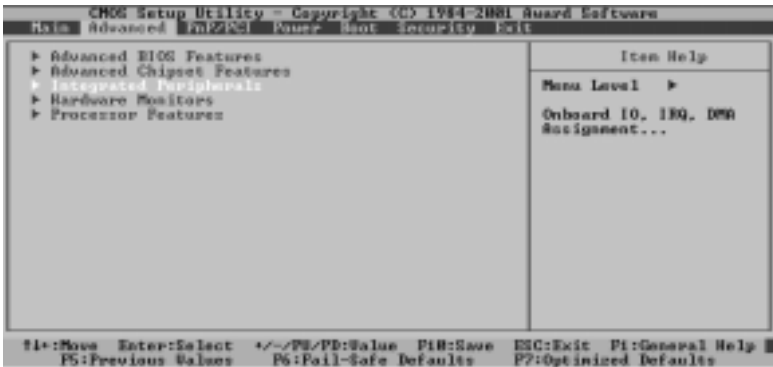
With "Integrated Peripherals" is highlighted, press the <Enter> key to activate the selection, as shown below.
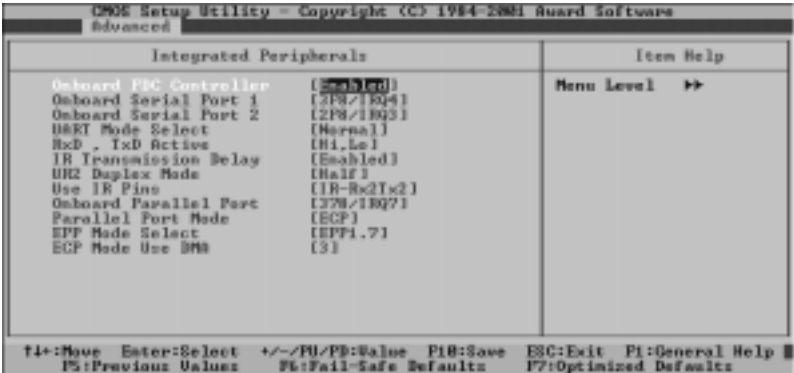
When the above menu appears, select the items using the <Up> <Down> arrow keys then press the <Enter> key to display the selected option.

Onboard FDC Controller

Select "Enabled" if your system has a floppy disk controller (FDC) installed on the mainboard and you wish to use it. The settings are "**Enabled**" and "Disabled."

Onboard Serial Port 1

This option allows the user to set the address and the corresponding IRQ for Serial Port 1. The settings are "Disabled", "**3F8/IRQ4**", "2F8/IRQ3", "3E8/IRQ4", "2E8/IRQ3" and "Auto."

Onboard Serial Port 2

This option allows the user to set the address and the corresponding IRQ for Serial Port 2. The settings are "Disabled", "3F8/IRQ4", "**2F8/IRQ3**", "3E8/IRQ4", "2E8/IRQ3" and "Auto."

UART Mode Select

This option allows the user to select the UART mode for the BIOS. The settings are "IrDA", "ASKIR" and "**Normal**."

RxD, TxD Active

This option allows the user to set the "RxD, TxD Active" functions. The settings are "Hi, Hi", "**Hi, Lo**", "Lo, Hi", and "Lo, Lo."

IR Transmission Delay

If "Enabled", the transmssion of IR (Infrared) signals will be delayed. The settings are "**Enabled**" and "Disabled."

UR2 Duplex Mode

This allows you to set the mode for the UR2 Duplex Mode. The settings are "Full" and "**Half**."

Use IR Pins

This item sets the mode for Use IR Pins. The settings are "RxD2", "TxD2" and "**IR-Rx2Tx2**."

Onboard Parallel Port

This option allows the user to set the address and the corresponding IRQ for the onboard Parallel port. The settings are "Disabled" , "**378/IRQ7**", "278/IRQ5" and "3BC/IRQ7."

Parallel Port Mode

This option set the mode for the onboard Parallel port. The settings are "**SPP**", "EPP", "ECP" and "ECP+EPP."

EPP Mode Select

This option allows the user to select the EPP mode. The settings are "EPP 1.9" and "**EPP 1.7**."

EPP Mode Use DMA

This option allows you to select which DMA is assigned to EPP. The settings are "1" and **"3"**.

7-4.4 Hardware Monitors
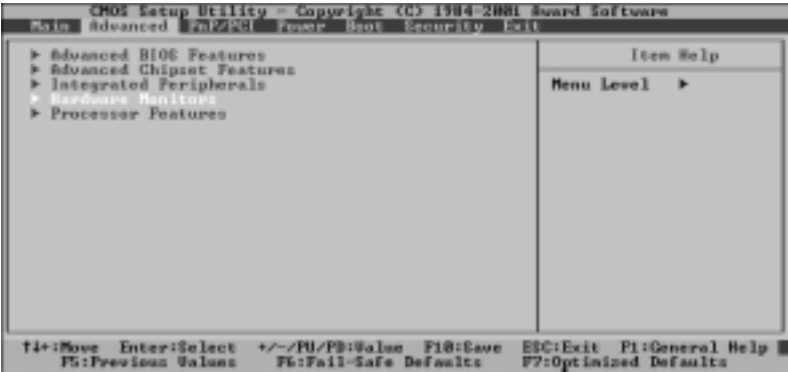
When the item "Hardware Monitors" is highlighted, press the <Enter> key to activate the Hardware Monitors sub-menu" (shown below).

CPU Warning Temperatures

This item allows the user to set the CPU temperature threshold. When the CPU temperature reaches the threshold temperature set by the user, an alarm will be activated and a warning message will be displayed onscreen. The settings are "Disabled", "50^{0}C/122^{0}F", "53^{0}C/127^{0}F", "56^{0}C/133^{0}F", "**60^{0}C/140^{0}F**", "63^{0}C/145^{0}F", "66^{0}C/151^{0}F" and "70^{0}C/158^{0}F."

7-4.5 Processor Features
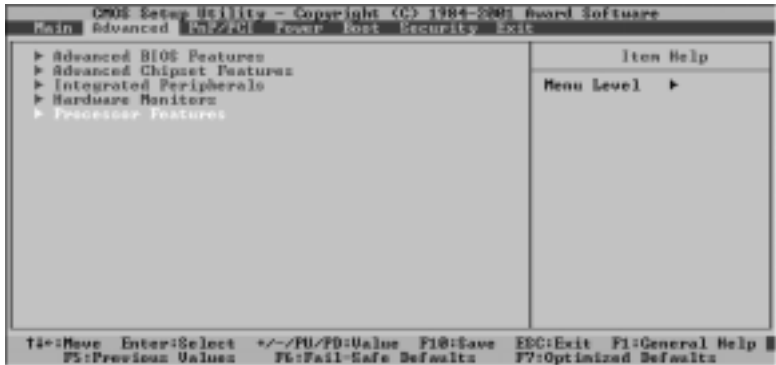
When the item "Processor Features" is highlighted, hit the <Enter> key to activate the sub-menu, which is shown below.
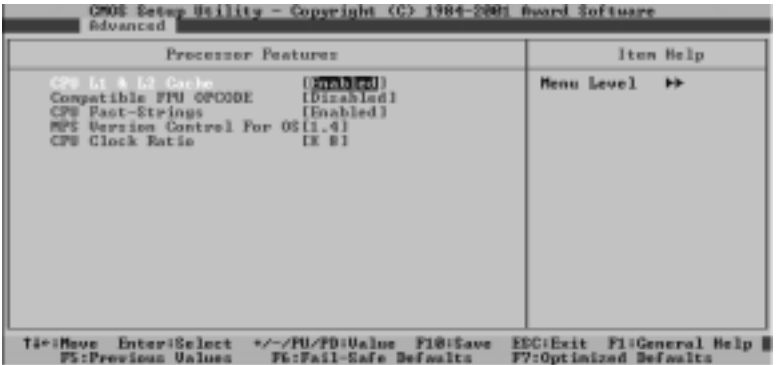
CPU L1 & L2 Cache

Set this option to "Enabled" to activate the function of the CPU L1 and L2 caches. The settings are "Disabled" and "**Enabled**."

Compatible FPU OPCODE

Set this option to "Enabled" to activate the Compatible FPU OPCODE function. The settings are "**Disabled**" and "Enabled."

CPU Fast-Strings

Set this option to "Enabled" to activate the function of CPU Fast-Strings.   The settings are "Disabled" and "**Enabled**."

MPS Version Control for OS

Set this option to "Enable" to activate the version of MPS control for the OS. The settings are "1.1" and "**1.4**".

CPU Clock Ratio

Use this option to set the clock ratio of the processor.   The settings are "**x8**" "x9", "x10", "x11", "x12", "x13", "x14", "x15", "x16", "x17", "x18", "x19", "x20", "x21", "x22" and "x23".

7-5   PnP/PCI Configurations

When the Item "PnP/PCI" is highlighted on the main menu bar, press the <Enter> key to activate the following screen:
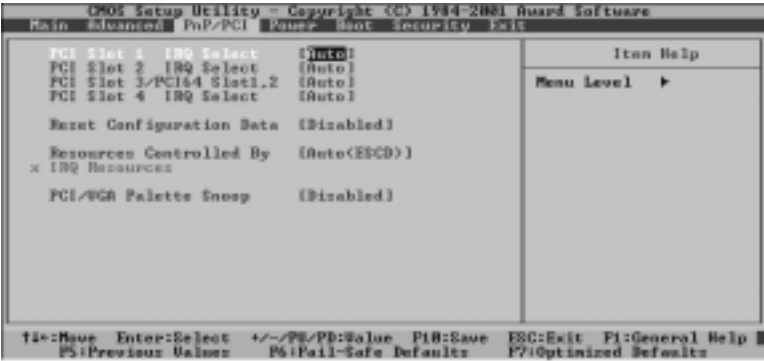
PCI Slot 1 IRQ Select

Has the AwardBIOS assign the IRQ to PCI slot 1. The settings are "**Auto**", "3", "4", "5", "7", "9", "10" and "11."

PCI Slot 2 IRQ Select

Has the AwardBIOS assign the IRQ to PCI slot 2. The settings are "**Auto**", "3", "4", "5", "7", "9", "10" and "11."

PCI Slot 3/PCI64 Slot 1, 2

Has the AwardBIOS assign an IRQ PCI slot 3 and the two 64-bit PCI slots. The settings are "**Auto**" ,"3", "4", "5", "7", "9", "10" and "11."

PCI Slot 4 IRQ Select

Has the AwardBIOS assign an IRQ to PCI slot 4. The settings are "**Auto**","3", "4", "5', "7", "9", "10". and "11."

Reset Configuration Data

If you have installed a new add-on device and this add-on device has caused conflicts in system configuration and has resulted in system boot-up failure, then, select "Enabled" to reset "Extended System Configuration Data" (ESCD) for the OS to reboot the system. The settings are "Enabled" and "**Disabled.**"

Resources Controlled By

The Award BIOS can automatically configure all the boot devices and all Plug and Play compatible devices. However, if this item is set to "Auto (ESCD)", the user is not able to set the IRQ DMA and memory address, since the Award BIOS will automatically assign the values to these fields. The settings are "**AUTO (ESCD)**" and "Manual."

PCI/VGA Palette Snoop

To obtain ooptimum system performance, this item has been pre-set to "Disabled" by the manufacturer. The settings are "Enabled" and "**Disabled**."

7-6   Power Management

When the Item "Power" is highlighted on the main menu bar, press the <Enter> key to activate the following screen:
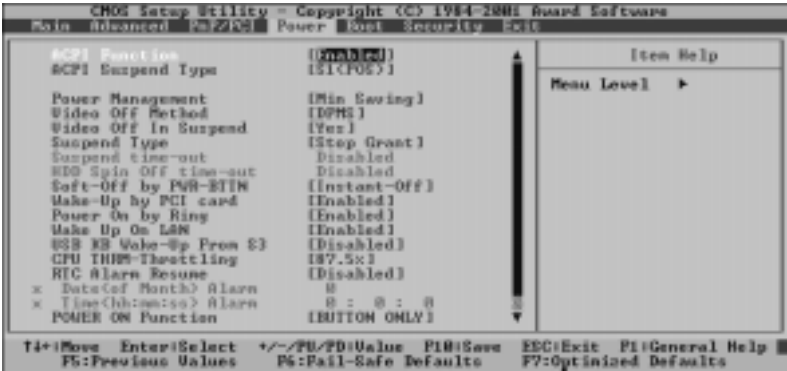
ACPI Function

This item allows you to enable and disable the Advanced Configuration and Power Management (ACPI). The settings are "**Enabled**" and "Disabled."

ACPI Suspend Type

This item allows the user to determine the ACPI Suspend type. The settings are "**S1 <POS>**", and "S3 <STR>."

Power Management

This option sets the degree of power saving for the system, especially for HDD Power Down, Doze Mode and Suspend Mode. The settings are "User Define", "**Min Saving**",   and "Max. Saving."

Video Off Method

This item determines the manner in which the monitor is turned off. The settings are "Blank Screen", "V/H SYNC+Blank" and "**DPMS**". Select "V/H SYNC+Blank" to turn off the vertical and horizontal synchronization ports and the monitor. Select "Blank Screen" to turn off the video buffer and the monitor. Select "DPMS" to initiate display power management signals.

Video Off in Suspend

This item allows the AwardBIOS to turn off the video signal in suspend mode. The settings are: "No" and "**Yes**."

Suspend Type

This item sets the system suspend type. The settings are "**Stop Grant**" and "PwrOn Suspend."

Soft-off by PWR-BTTN

This item determines the system's "Soft-off" mode when the user presses the power-button. The settings are "**Instant-off**" and "Delay 4 Sec."

Wake Up by PCI Card

This item allows the AwardBIOS to enable system wake up from a PCI card signal. The settings are "**Enabled**" and "Disabled."

Power On by Ring

This item allows the AwardBIOS to enable system wake up from a ring signal. The settings are "**Enabled**" and "Disabled."

Wake Up on LAN

This item allows the AwardBIOS to enable system wake up from a local area network (LAN) signal. The settings are: "**Enabled**" and "Disabled."

USB KB Wake Up from S3

This item allows the AwardBIOS to enable an USB keyboard wake up from a suspend to RAM (S3). The settings are: "Enabled" and "**Disabled**."

CPU THRM Throttling

This item allows the AwardBIOS to enable system CPU percentage speed throttling upon reaching a user-defined temperature setting. The settings are: "**87.5%**", "62.5%", "50.0%", "37.5%", "25.0%", and "12.5%."

RTC Alarm Resume

This item allows the AwardBIOS to enable system wake up from an alarm signal based on the real-time clock. The settings are: "Enabled" and "**Disabled**."

Upon scrolling the window downward using the Down <Arrow>, the remaining power options become visible as shown below:
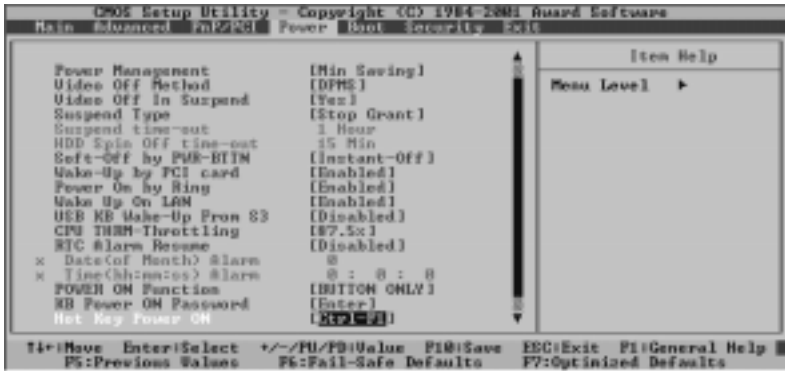
Power On Function

This option allows the user to determine the method by which the system activates the power on function. The settings are "Password", "Hot KEY", "Mouse Left", "Mouse Right", "Any Key", "**BUTTON ONLY**" and "Keyboard 98."

KB Power On Password

This item allows the user to set the password to activate the power on function through the keyboard. Press the <Enter> key to **enter the password**.

Hot Key Power On

This option allows the user to select the hot key to activate the power on function. The settings are "**Ctrl-F1**", "Ctrl-F2", "Ctrl-F3", "Ctrl-F4", "Ctrl-F5", "Ctrl-F6", "Ctrl-F7", and "Ctrl -8."

7-7   Boot-up Devices

When the Item "Boot" is highlighted on the main menu bar, press the <Enter> key to activate the following screen:
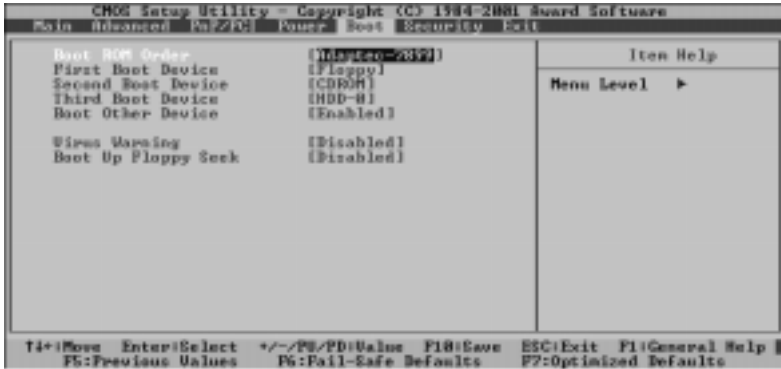
Award BIOS attempts to load the operating system from devices specified by the user in a user-specified sequence.

Boot ROM Order

This option determines the boot ROM order. The settings are "**Adaptec-7899**" and "Any PCI Slot".

First Boot Device

This item allows the user to select the device as the first boot-up device. The settings are "**Floppy**", "LS120", "HDD-0", "SCSI", "CDROM", "HDD-1", "HDD-2" and "HDD-3."

Second Boot Device

This item allows the user to select the device as the second boot-up device. The settings are The settings are "Floppy", "LS120", "HDD-0", "SCSI", "**CDROM**", "HDD-1", "HDD-2" and "HDD-3."

Third Boot Device

This item allows the user to set the device as the third boot-up device. The settings are The settings are "Floppy", "LS120", "**HDD-0**", "SCSI", "CDROM", "HDD-1", "HDD-2" and "HDD-3."

Boot Other Device

If "Enabled", this option enables the BIOS to load the OS from another device rather than the ones that have been specified as the first, second and third boot up devices. The settings are "**Enabled**" and "Disabled."

Virus Warning

This item allows the user to choose the VIRUS Warning feature for the IDE Hard Drive Disk boot sector protection. If this function is enabled and if someone attempts to write data into this area, the BIOS will then display a warning message and an audible alarm will be activated. The settings are "Enabled" and "**Disabled**."

Boot Up Floppy Seek

Set this option to "Enabled" to allow the BIOS to test floppy drives to determine whether they have 40 or 80 tracks. The settings are "**Enabled**" or "Disabled."

7-8   Security Setup

When the Item "Security" is highlighted on the main menu bar, press the <Enter> key to activate the following screen:

Set Supervisor's Password

When the item "Set Supervisor Password" is highlighted on the above screen, press the <Enter> key to activate the following screen. When prompted, type a password in the dialogue box to establish or to change the Supervisor's Password.

Set User's Password

When the item "Set User's Password" is highlighted on the Security Main Menu, press the <Enter> key to activate the password screen. When prompted, type a password in the dialogue box to establish or to change the User's Password.

Security Option

When the item "Security Option" is highlighted on the Security Main Menu, press the <Enter> key to activate the Security Option screen. This option allows the user to determine if the password is required every time the system boots up or only when you enter the CMOS setup. The settings are "System" and "**Setup**."

7-9   Exit Setup

Select "Exit" from the "Main Menu" bar and press the <Enter> key to activate the following screen:
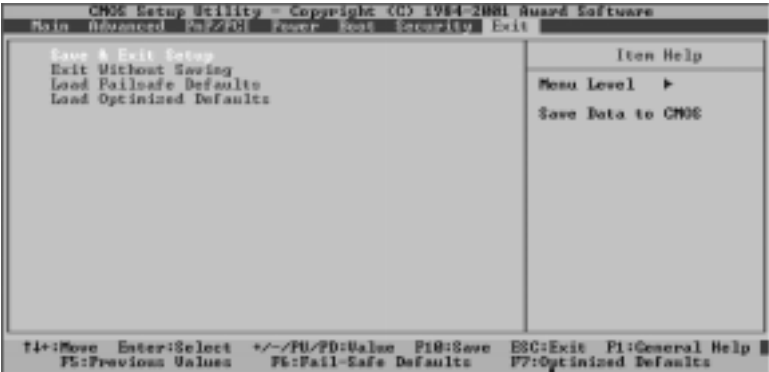
Save & Exit Setup

If you highlight the letter "Y" and press <Enter> with the "Save & Exit Setup" field highlighted, you will save the changes you've made in the BIOS program (CMOS) and then exit setup. Your system should then continue with the boot-up procedure. The options are "Y", and "**N."**

Exit without Saving

If you highlight the letter "Y" and press <Enter> with the "Exit without Saving" field highlighted, any of the changes you've made in CMOS will not be saved when you exit the CMOS Setup. Your system should then continue with the boot-up procedure.

Load Fail-Safe Defaults

When the item "Load Fail Safe Defaults" is highlighted, press the <Enter> key to activate the dialogue box. Press the "Y" key to load the BIOS Fail-Safe default values for the most stable system operation. The settings are "Y" and "**N**."

Load Optimal Defaults

When the item "Load Optimal Defaults" is highlighted, press the <Enter> key to activate the dialogue box. Then press the "Y" key to load the default values that will provide the optimal system performance. The settings are "Yes" and "**No**."

Notes

Appendix A
AwardBIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for errors. If an error is found and a correction is needed, the BIOS will activate an alarm or display a message.

If a message is displayed, it will be accompanied by the following:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep Codes

Currently, there are two kinds of beep codes used in AwardBIOS. One code indicates that a video error has occurred and that the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that a Rambus error has occurred. This beep code consists of a single long beep that sounds repeatedly.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

The CMOS hecksum is incorrect. This can indicate that CMOS has been corrupted. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain the proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also make sure the disk has been formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

The type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates that the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

The hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize the controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during boot up.

If you are intentionally configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory Verify Error at ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

FLOPPY DISK(S) fail (80) ® **Unable to reset floppy subsystem.**

FLOPPY DISK(S) fail (40) ® **Floppy Type dismatch.**

Hard Disk(s) fail (80) ® **HDD reset failed**

Hard Disk(s) fail (40) ® **HDD controller diagnostics failed.**

Hard Disk(s) fail (20) ® **HDD initialization error.**

Hard Disk(s) fail (10) ® **Unable to recalibrate fixed disk.**

Hard Disk(s) fail (08) ® **Sector Verify failed.**

Keyboard is locked out - Unlock the key.

BIOS detect the keyboard is locked. P17 of the keyboard controller is pulled low.

Keyboard error or no keyboard present.

Cannot initialize the keyboard. Make sure that the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop.

System will repeat POST procedure infinitely while the P15 of keyboard controller is pulled low. This is also used for M/B burn in testing.

BIOS ROM checksum error - System halted.

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail..

BIOS reports the a memory test fail if the onboard memory has an error.

Appendix B
AwardBIOS POST Codes

This section lists the POST (Power On Self Testing) Codes for the Award BIOS.

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1.　Test special keyboard controller for Winbond 977 series Super I/O chips. 2.　Enable keyboard interface.
09h	Reserved
0Ah	● Disable PS/2 mouse interface (optional). ● Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). ● Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.

Debuggig LED Encoding

Post Code	Encoded LED	Task
C1h	001b	Memory Detection
05h	010b	BIOS Shadowing
07h	011b	KBC Initialization
0Eh	100b	Shadow RAM test
14h	101b	Chipset defaults loaded
26h	110b	Clock generator configured
2Bh	111b	Video initialization
52h	000b	Just clear LEDs

POST (hex)   **Description**

POST (hex)	Description
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	● Program CPU internal MTRR (P6 & PII) for 0-640K memory address. ● Initialize the APIC for Pentium class CPU.

POST (hex)	Description
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed ….
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program writes allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)

POST (hex)   **Description**

POST (hex)	Description
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onboard_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved

73h	(Optional Feature)
	Enter AWDFLASH.EXE if :
	     -AWDFLASH is found in floppy drive.
	     -ALT+F2 is pressed

74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor

POST (hex)	Description
80h	Reserved
81h	Reserved
82h	1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

Notes

Appendix C
AwardBIOS Error Beep Codes

This section lists the Award BIOS Error Beep Codes.

Beep Code	Error Message Description
1 short beep	System boot.
2 short beeps	Incorrect CMOS setting.
1 long + 1 short	DRAM error.
1 long + 2 short	VGA error.
1 long + 3 short	Keyboard error.
1 long + 9 short	ROM error.
Long beeps	Memory module error.
High beeps	Power error.

Notes

Appendix D
System Specifications

Processors
Single or dual Intel® Xeon™ 1.5 - 2.4+ GHz processors at a front side bus speed of 400 MHz.

Note: Please refer to the support section of our web site for a complete listing of supported processors. (http://www.supermicro.com/TechSupport.htm)

Chipset
Intel 860

BIOS
4 Mb AMI® Flash ROM
APM 1.2, DMI 2.1, PCI 2.2, ACPI 1.0, Plug and Play (PnP)

Memory Capacity
Four 184-pin RIMM sockets supporting up to 2 GB RDRAM

Note: Memory modules should be installed two at a time (the first two in Bank0, the second pair in Bank1, if needed).

RIMM Sizes
128 MB / 256 MB / 512 MB PC600 and PC800 RDRAM modules

SCSI Controller
Adaptec AIC-7899 for dual channel Ultra160 SCSI

SCSI SCA Backplane Controller
QLogic GEM318 controller for SAF-TE compliance (optional)

SCSI Drive Bays
Six (6) drive bays to house six (6) standard 1" 80-pin SCA SCSI drives

Peripheral Bays
One (1) 3.5" floppy drive
One (1) slim CD-ROM drive
Six (6) 3.5 x 1" drive bays (for SCSI drives)
One (1) 5.25" drive bay (for CD-ROM or IDE drive)

Expansion Slots

Two (2) 64-bit, 66 MHz and four (4) 32-bit, 33 MHz PCI slots

One AGP Pro 1.5V slot

PC Health Monitoring

Seven onboard voltage monitors for CPU core, chipset voltage, +5V and +12V

Fan status monitor with firmware/software on/off control

Environmental temperature monitor and control

CPU fan auto-off in sleep mode

Power-up mode control for recovery from AC power loss

System overheat LED and control

System resource alert

Power Supply

Type: 1 x 400W with +3.3V, +5V, +12V, -5V and -12V main DC outputs and a 5V standby output.

Input Voltage: 100-240VAC with PFC (w/ ± 10% tolerance). Power unit is auto-switching capable

Fans: One (1) 8-cm ball bearing fan

Operating Environment

Operating Temperature Range: 0 to 35 degrees C

Humidity Range: 5-80%, non-condensing

Safety Regulations: CE, UL/CUL, EMC

EMI: FCC part 15, CISPR 22

Cooling Fans

System: Four (4) 8-cm hot-plug ball bearing fans

Form Factor

P4DC6+ Motherboard: Extended ATX (12 x 13 in.)

SC822S-400LP Chassis: 2U rackmount

Operating Systems Supported

Windows NT, Windows 2000, Solaris, Netware, SCO UNIX and Linux

Dimensions
16.7 x 3.46 x 25.6 in.; 425 x 88 x 650 mm (W x H x D)

Weight
Net (Bare Bone): ~33 lbs. (15 kg.)
Gross (Bare Bone): ~55 lbs. (25 kg.)

Notes